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South Africa: Qualitative Study on Innovation in Manufacturing Small and Medium Sized Enterprises (SMEs)

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Qualitative Study on Innovation in Manufacturing Small and Medium-Sized enterprises (SMEs) in South Africa

Exploration of Policy and Research Issues

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I would like to thank the enterprise owners and managers who gave up their time and were willing to talk and share their perceptions of daily realities, their stories and views with us. I also thank our research partners of the University of Pretoria, in particular Prof Dr Tinus Pretorius, Prof Dr John Mugabe and Dr Alice Chan. A special thanks to Dr Bok Marais for organising and participating in the interviews, and sharing his valuable observations and thoughts. Also special thanks to Anelisiwe Hatto who accomplished the challenging task of transcribing the interviews, certainly not the easiest job in the qualitative data collection venture.

Jaap Voeten (Tilburg University/Radboud University Nijmegen)

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Introduction

The promotion of innovation in Low Income Countries (LICs) has recently appeared on the agenda of policy-makers and international development agencies. Many agree that innovation is crucial in these countries, because it is fundamental for growth in order to catch up with middle and high income economies (Chaminade et al., 2010). Current research, theory development and policy formulation to promote innovation, however, have mainly focused on innovation in the more advanced economies, whilst investigation of these issues in low income countries to date has been limited.

The 5-year research project '*Enabling Productivity and Innovation in Low Income Countries, (EIP-LIC)*' funded by the British Department for International Development (DFID) and commissioned to Tilburg University, aims to fill research gaps on innovation in LICs from an economic perspective. EIP-LIC aims to deliver robust high quality evidence from Africa and Asia on how to increase innovation and raise productivity in manufacturing SMEs, through a coordinated set of thematic and country case studies providing internationally comparable data. The countries of study include Kenya, Tanzania, South Africa, Ghana, Ethiopia, Uganda, South Africa, Indonesia, India and Bangladesh.

EIP-LIC focuses on manufacturing Small and Medium-sized Enterprises (SMEs) in LICs. Promoting innovation in these enterprises has a particularly positive impact on development (Szirmai et al., 2011); SMEs are usually operating on the edge of the formal and informal sector and have low levels of productivity and competitiveness. Compared to the agriculture and services sectors, manufacturing in LICs is typically characterised by a limited share of the total GDP. Innovation within SMEs in manufacturing enables these enterprises to raise productivity and grow, resulting in a better-balanced economic structure while generating employment opportunities for poorer groups and contributing to poverty reduction. Moreover, promoting innovation in domestic manufacturing is a route towards import substitution and increases the competitive (export) position of firms on the world market.

One part of the project concerns a quantitative analysis of the internal and external factors of the innovation process within firms in all countries of study. Another part concerns a complementary qualitative exploration of the policy and research issues in each country. This involves the development of a series of case studies of manufacturing SMEs. The research output of qualitative reports, working papers and policy briefs are available at the EIP-LIC's website: <http://www.tilburguniversity.edu/dfid-innovation-and-growth/>

This report presents the findings of the qualitative exploration in South Africa. It is targeted at the DFID project researchers as well as the broader academic community with similar research interests in providing ideas or supporting them to identify and/or validate research questions and hypotheses. In addition, it may provide useful bottom-up insights to policy makers within governmental agencies, firms and NGOs on innovation involving the entrepreneurs' perspective. It is also targeted at SME owners and SME branch organisations, who will hopefully see their business and socio-economic and institutional context reality accurately reflected in the report.

The structure of the qualitative exploration reports is the same for all countries in EIP-LIC, enabling cross-country comparison of the research and policy issues. Thus chapter 1 is standard for every report, outlining the DFID project research challenges, approach and methodology. Chapter 2, by contrast, focuses on the country of study only and briefly summarises latest trends in the manufacturing sector from secondary sources. Chapter 3 constitutes the main part of the report and provides the original primary qualitative data (cases) and analysis with regard to innovation in manufacturing SMEs in South Africa. Chapter 4 of the report concludes with analysis of the data and the identification of policy and research issues with special reference to the 'Innovation Systems' and 'Finance for Productivity Growth' research themes of the project.

1. DFID research project challenges

1.1 Approach: complementing quantitative with qualitative research

EIP-LIC aims to deliver robust high quality evidence from Africa and Asia on how to increase innovation in manufacturing SMEs so as to raise productivity, through a coordinated set of thematic and country case studies providing internationally comparable data. The project takes an econometric approach within two thematic areas: ‘Innovation Systems’ and ‘Finance for Productivity Growth’. The research teams address internal capabilities and external institutional factors, institutions and policies that support or hinder the diffusion and adoption of innovation and finance raising productivity at SME firm level. Specifically, the project takes an ‘economics’ perspective on innovation, and involves econometric analysis of a set of variables concerning barriers at firm, regional and national levels and their causalities with the *innovative behaviour/capability of entrepreneurs* and subsequently innovation and productivity. This constitutes a reductionist and deductive approach in defining variables for analysis in which the impact of individual factors on innovation is assessed by applying quantitative econometric methods. The research methods include firm-level surveys in all countries of study (in cooperation with The World Bank), experiments and Randomised Control Trials (RCTs). The quantitative analysis will serve as a basis for identifying relationships between internal capabilities, external institutional factors and finance on the one hand and innovativeness and productivity growth on the other.

Applying quantitative methods in development research brings some limitations and challenges. In EIP-LIC, conceptual issues also emerged, in terms of the definition and measurement of innovation and productivity in LICs. These may seem straightforward variables at first glance, but their measurement can be more complicated in the LIC context. Innovation may be manifested differently, not via high profile technological and radical breakthroughs, usually measured by R&D expenditures or patents (OECD, 2005), but by more incremental adoption and adaptation or new combinations of existing technologies (Szirmai et al., 2011). These forms of innovation are equally important for raising productivity and competitiveness of SMEs in LICs.

Moreover, innovation research and theory development in recent decades has typically involved empirical material from advanced economies, such as the innovation systems literature of Lundvall (1992) and Freeman (1987), where innovation takes place within a relatively stable institutional and Science, Technology and Innovation (STI) policy context and is ‘controlled’ and supported by established innovation system actors and innovation policies. In LICs, however, the contemporary institutional realities and formal/informal dual economic contexts are different and may involve other less visible or less commonly known factors and policies around SMEs affecting their innovativeness and how innovation manifests itself.

Therefore, the theory and associated policies of how innovation evolves within an innovation system in the institutional contexts in LICs may be different, which is increasingly acknowledged in recent innovation systems literature (Lundvall, 2009; World Bank, 2010). For instance, entrepreneurs are innovating by Doing, Using and Interacting (DUI) in fast-changing contexts, enabled by informal institutions and informal (social) learning. Applying the research variables on innovation and productivity in LICs from existing literature and theory (deduction) based on advanced economies, therefore, might not take all relevant variables into account. A more precise identification of variables might be obtained by complementing the selection with a broader understanding of contemporary realities and context on the ground in LICs.

Another research challenge in EIP-LIC concerns the interpretation of the quantitative survey research outcomes of the project, involving cross sectional analyses amongst others, where attribution and explanatory issues among independent and dependent variables arise. Although control variables are typically verified,

the correlations cannot be easily translated into causalities in complex and dynamic contexts. This is particularly important for the interpretation of research outcomes at the policy level in the realities of the country concerned. A broader insight into how innovation processes and actor interaction mechanisms evolve might help to open the black box and analyse and interpret the quantitative outcomes.

In an effort to manage these challenges, EIP-LIC includes complementary qualitative research, involving an exploration and description of contemporary realities of innovation in manufacturing SMEs in the LICs. This aims at inductively identifying actual and relevant *research and policy issues* as input for the EIP-LIC research themes as well as for additional explanatory evidence supporting research output.

In operational terms, Tilburg University and partners conducted a series of case studies of manufacturing SMEs in each of the 10 target countries of study in the project. The holistic case study approach and method involves interviews capturing original insights, views and perceptions of SME owners and managers. Similar report format and comparable data will be used for all countries of study in EIP-LIC, enabling cross-country comparison to identify overall trends and patterns in innovation and productivity policy and research issues in manufacturing SMEs in LICs.

1.2 Case study methodology

The objective of the qualitative study of EIP-LIC is to identify relevant policy and research issues concerning innovation in manufacturing SMEs within contemporary realities in South Africa. Applying a case study approach is particularly useful in this respect, since this method is an approach for inductively exploring and identifying concepts, noticeable similarities, trends and patterns of socio-economic phenomena (Yin, 2003).

The case study research in South Africa involved a series of 16 interviews with managers and/or owners of manufacturing SMEs. This may seem a limited number to justify external research validity. However, the approach usually involves in-depth rich and detailed descriptions and a multidimensional analysis of the complexities and linkages of a few cases to gain an understanding of the (socio-economic) mechanisms and processes of the case subject. In the case descriptions, innovation as an economic phenomenon is the case 'subject', whereas the unit of analysis is a manufacturing SME. The case description holistically explores the type and basic features of innovation within the SME, and reviews the impact on productivity and competitiveness over the past 2 to 5 years.

The data for the case descriptions are obtained via 'semi-structured' interviews with SME owners and managers. 'Structured' refers to the systematic review and discussion of innovation(s) in the firms, the *innovation process*, *internal capabilities*, and innovation system actors around the firm, including *formal institutions*, the *business system* and *informal institutions* (attached as Annex 1). These actors and institutions encompass formal and informal, private, public, and quasi-public institutions or organisations around the SME. 'Semi' refers to the interviewing approach of encouraging owners or managers to tell their story, and express their concerns and perceptions freely, without being confined to the 'questionnaire framing'. Of particular interest is what innovation means in the manufacturing SMEs in their context, and the less known favourable and unfavourable institutional conditions and barriers enabling or preventing it.

All interviews are recorded and transcribed. The data generated are entered and stored using qualitative data analysis software. The writing of the case is a step-by-step process of unravelling, ordering and organising the transcriptions into compact SME case descriptions of 2/3 pages following a similar format. The series of case descriptions are compared and analysed for patterns, differences and similarities in internal capabilities and socio-economic and institutional contexts. The findings are summarised as policy and research issues

that could serve as input for the quantitative research of the ‘Innovation Systems’ and the ‘Finance for Productivity Growth’ themes under EIP-LIC.

1.3 Selection of SMEs and fieldwork

The selection criteria for the cases included:

- The company is a formally registered SME. In the DFID project context, an SME is understood as a company with 10-100 employees, whereas turnover, assets and capital formation are not considered.
- The company is involved in manufacturing. The project follows the International Standard Industrial Classification of all Economic Activities (ISIC). In this standard, manufacturing is defined as the physical or chemical transformation of materials or components into new products, whether the work is performed by power-driven machines or by hand, whether it is done in a factory or in the worker's home, and whether the products are sold at wholesale or retail. Included are assembly of component parts of manufactured products and recycling of waste materials. Moreover, given the pace and importance of the new technologies, the project considers software and mobile app development as a form of manufacturing to be included in the selection of cases.
- The company is a 100% South African owned/indigenous company. No foreign or joint ventures.
- The company introduced some form of innovation, preferably process or product, which resulted in increased productivity and competitiveness in terms of export promotion or import substitution. Other types of innovation may also be considered: management, business concept/practice, inputs, functional innovation.
- Value creation within the company, as a result of the innovation, is essential. This may concern a significant productivity increase by reduced costs (pushing the productivity frontier - saving on labour, capital, and input) or more sales and income due to the launch of premium products and competitiveness.
- Innovation process - idea, test, implementation and commercialisation - takes place in the firm and is initiated and owned by the entrepreneur. The SME owner appropriates the additional innovation value.

These selection criteria are defined in such a way that the selected cases represent the EIP-LIC target group: manufacturing SMEs. Moreover, the criteria assure a certain homogeneity within the selected cases, which will enable comparison of cases while supporting a certain validity of the identified trends or patterns. At the same time, allowing some heterogeneity, by including deviant cases, provides more contrast, and thus enables the research team to better construct and highlight divisions in the innovation process, linkages, system or mechanisms.

An essential element of the selection is the notion that types of SME innovation in LICs are not confined to technological (radical) inventions resulting from particular R&D investments and efforts. Innovation in manufacturing SMEs in LICs more often encompasses incremental adoption and adaptation or new combinations of existing technologies, products, marketing, management or business practices. Moreover, innovation often does not concern one type only. More often, an initial innovation enables and/or triggers other types of innovation within a firm; a new technology allows the introduction of new products, for instance.

1.4 Fieldwork

The qualitative data collection through interviews in South Africa started from 8 to 13 October 2015. The South African research partner identified SMEs in Pretoria, Johannesburg and around. SMEs were initially identified by selecting companies from the EIP-LIC survey in South Africa. The basic data, location and addresses of companies are systematically listed in the survey. However, being aware of the ethnic diversity of South Africa, the team realized that all interviews were with white-owned companies only during the course of initial interviews. Therefore the fieldwork was extended from 20 to 23 Sept 2016 with a second round of interviews to get a better representation. In total, 16 owners/managers were interviewed (see list attached as Annex 2). An average of 2-3 interviews per day were completed. The interviews typically took 1.5 hours.

The research team respected a set of ethical codes in conducting the fieldwork. This involved a transparent explanation of the project and the purpose of collecting the data to the interviewed owners and managers. The research team provided assurance that the firms' data were kept confidential, with SMEs and interviewees anonymised in the descriptions. Before publication, a draft version of the report was first sent to the SME owner/manager to check whether there were any issues mentioned that he or she did not agree with, or felt uncomfortable with.

During the interviews, the SME owners and managers expressed interest in learning more about the project and about innovation in other SMEs. The team sent a copy of the final report to all interviewees, expressing their intention to maintain contact, and to 'give something back' in terms of participation in future policy debates, policy dissemination, contacts or networks. The final reports are to be accessible to the public and downloadable via the project website.

The original recording of the interviews and transcriptions are available for the project researchers - eventually open access - for further analysis and development of scientific papers and journal articles.

2. Introducing manufacturing SMEs in South Africa

South Africa's population of forty million is three-quarters black (African) and about 15% white (European), with the remaining 10% comprised of people of mixed white, Malayan, and black descent and people of Asian (mostly Indian) descent. The African majority is composed of many different ethnic groups, the largest of which are Zulu, Xhosa, Tswana, and Bapedi. The official languages include English, Afrikaans, Sesotho, Setswana, Xhosa and Zulu.

In the past, South Africa was ruled by a white minority which enforced a separation of races with a policy called apartheid. In 1994, the apartheid government eventually negotiated itself out of power after decades of international isolation, armed opposition and mass protests. The democratically-elected leadership under Nelson Mandela encouraged reconciliation and redressing of social imbalances. The ANC has dominated politics since the end of apartheid in 1994. The current leader, Jacob Zuma, was elected president in May 2009. Zuma has been at the centre of numerous political controversies and corruption cases and has been accused of using public funds for personal benefit.

South Africa is Africa's second-largest economy after Nigeria. It has a relatively high GDP per capita compared to other countries in Sub-Saharan Africa (\$13,046 at PPP as of 2016), qualifying it as a middle income country. Economic Growth in terms of GDP has been decreasing from 3.2% in 2011 to 1.6% in 2014, 1.3% in 2015 and 1.5% in 2016. Despite the relatively high GDP per capita, South Africa is still burdened by a relatively high rate of poverty and unemployment, and is also ranked in the top 10 countries in the world for income inequality. Rates of formal-sector unemployment and crime are high, and the quality of public education is low.

Allegations of corruption among civil servants persist at all levels despite an anti-corruption regulatory framework. The process for tendering public contracts is often politically driven. Property rights are relatively well protected, and contracts are generally secure.

2.1 The manufacturing sector

According to recent World Bank data, the contribution of the South African manufacturing sector is relatively modest: 15.2% of GDP in 2013 and 13% in 2015. Some 10 years earlier, the contribution was substantially higher, towards 20%. Manufacturing is dominated by industries such as agro-processing, automotive, chemicals, information and communication technology, electronics, metals, textiles, clothing and footwear.

The manufacturing sector suffered from the impact of the global economic downturn and global financial crisis of 2008. While South Africa's manufacturing sector enjoyed a production growth percentage of 4.6% in 2010, it gradually slowed to 1.3% in 2013, 0.1% in 2014, and 0.0% in 2015. The overall weakness in South Africa's industrial output reflects a wide range of factors, including problems with low productivity.

2.2 Small and Medium-sized Enterprises (SMEs)

According to official figures¹, 91 percent of formal business entities in South Africa are SMEs, contributing between 52 and 57 percent to the country's GDP, and about 61 percent to employment. By virtue of their impact on job creation, wealth creation and service delivery, SMEs and social businesses are recognised to have a significant and positive impact on the economy, and are increasingly understood to be fundamental to the reduction of poverty and unemployment.

¹ <http://disrupt-africa.com/2015/11/south-african-smes-struggling-to-survive/>

SMEs across the board face a host of factors that hinder their growth, resulting in only 10 percent of them employing more than 50 people. According to the AfricaGrowth Institute², the key limiting factors to SME growth are perceived to include government taxes and regulations, especially red tape and the cost of regulatory compliance.

The majority of South African SMEs are struggling to survive, showing a decline in employment and turnover, contrary to global trends, according to the 2015 SME Growth Index³. The index found just over one in five South African SMEs reported a decline in turnover from the previous year, while a further 20 per cent reported zero growth in turnover during the same period. The business climate for SMEs is becoming ever more hostile. Lack of skills, local economic conditions and cost of labour were other factors SMEs said inhibited the growth of their firms.

2.3 Policy environment

In 2012, the government completed an overall National Development Plan that aspires to end poverty and reduce inequality by 2030. The government has identified the development of small enterprises in this sector as essential to the recovery of the country's economy and ensuring employment creation. It is acknowledged that small, innovative enterprises and entrepreneurs require active support from both government and the private sector.

Under the broader plans, the government is implementing a Ten-Year Innovation Plan (TYIP) (2008-18) and is currently complementing these efforts with the National Industrial Policy Framework and other socio-economic policy imperatives. Key in the innovation policy is to modernise the industrial base and to increase competitiveness. It has a portfolio of R&D-led industry development programmes in the areas of additive manufacturing, advanced metals, aerospace, chemicals, energy, platinum, mining and ICT. Moreover, industry-science linkages are stressed by the government for agenda setting and stimulating investment in STI. The Department of Science and Technology (DST) and of Trade and Industry (DTI) have embarked on a process of reviewing the incentives and support instruments for increased R&D, innovation commercialisation and improving linkages with industry. While a focused programme on innovation for inclusive development has been launched, several initiatives are being introduced to address social challenges, with a strong emphasis on gender and black representation in science, technology and engineering.

A major bottleneck for South Africa's socio-economic development in general, and for the advancement of STI in particular, is the lack of a broad skills foundation. The share of the adult population with tertiary-level education is low by OECD standards, and the ageing of the white male STI workforce further weakens the skills base. To increase the pool of human capital for STI, the government has a series of initiatives that focus on improving access to science and mathematics education for youth and supporting postgraduate students and researchers.

² <http://www.africagrowth.com/>

³ <http://smegrowthindex.co.za/>

3. Empirical data: cases of manufacturing SMEs in South Africa

This chapter presents eight cases of SMEs whose owners were interviewed in South Africa in two periods (8-13 October 2015 and 20-23 Sept 2016). The selection of eight out of the original sixteen interviews was completed with a view to providing homogeneity in terms of the SMEs in manufacturing as well as to present a broad overview of the issues from the various SME owners' perspectives. Moreover, the diversity of the eight cases reflects the complexity of the current South African political and economic context. The write-up format is similar for each case: a description of the innovation, the internal capability and external environment (formal institutions, business systems and informal institutions). Notable issues outside this framework, which were stressed by the owner and/or manager of the SMEs, are also included.

3.1 Food processing - cereals (41 employees)

The company processes barley and other raw cereal materials into intermediate products for large food manufacturers in South Africa. It was originally established in the 1950s and subsequently bought by Tiger Brands in the 1980s. The current owner (who was interviewed) bought the company in 2000 – *“having my own company is something I wanted and then the opportunity came along.”* He graduated in food sciences and has worked in the food industry ever since – *“I have worked with my family in this business for 15 years and it is reasonably successful.”* The company is located in an industrial zone in the outskirts of Johannesburg and currently has 41 employees, 11 of whom are in administrative or management positions, and the remainder in production, maintenance and distribution.

The company's main products include malt extract syrup, malt extract powder and a range of speciality flours. These are ingredients used for brewing, baking, confectionery, savoury and snack foods, as well as in the beverage and breakfast cereal industries – *“it concerns niche market products. We don't compete with the big producers of wheat and maize.”* The company principally supplies the affiliates of Nestlé, Kellogg's, Tiger and Pioneer in South Africa.



The company produces goods to order: the owner contacts the customers and asks what products or ingredients they need. He believes that a strategic advantage of the company is its long standing, stable and reliable network of these key food manufacturers. A small part of the production is exported to Tanzania and Zimbabwe, and occasionally also to Ghana, Kenya and Nigeria.

Barley as a raw material is produced in South Africa. The planning of the production process is quite complicated, according to the owner, because barley is not available year-round at the market – *“you can't just pick up the phone and say, 'I need some barley.'”* The company waits until barley becomes available, then buys and stores it in large quantities. It has capacity for 8 months' storage – *“the procurement side of barley is a specialist skill in itself.”*

The owner thinks that the business has been quite fortunate. One of the reasons is the increasing demand of the middle-class segment of the market, which has grown much faster than other segments in South Africa. Many people consuming traditional foods have switched to more Western types of food, including beers, snacks and breakfast cereals.

Innovation

The current malting facility in the company has remained unchanged for the past 15 years. The owner is currently constructing a second malting facility to increase production capacity – *“we’re using and experimenting with the best technology that we can find. Once we’ve established that a new technology is better than the old one, we’ll apply it to the original installation as well.”* Since 2011, the owner and his technical staff have searched, tried, improved and modified the technology – *“we’ve been spending money and improving as the money becomes available, so we do a little bit then another little bit.”*

The company is currently at its highest level of investment ever, according to the owner. In the near future, another 34 million Rand (2.5 million USD) will be invested in a new technology project. The owner took on the risk of this investment because of his confidence in the market. He sees a large demand in South Africa – *“and it’s either supplied by South African companies or from other countries.”* He is not planning to export – *“I’m looking to expand the business by offering different products in South Africa rather than to export the same product to other countries.”*



Seven years ago, the owner set up another small manufacturing facility in Natal. He developed a liquid chicory extract, which is an ingredient for flavoured coffee. He experimented with an existing process for another product and applied it to chicory – *“nobody’s ever done this particular process before, although it was based on existing process theory.”* It took a long time to learn how to produce the chicory extract properly. The owner now plans to build another similar plant in Johannesburg.

His chicory production innovation is not protected through a registered patent. In fact, the owner is not nervous that other companies will copy it. He assumes that South Africa is the only country in the world with a market for chicory-flavoured coffee – *“I’m not expecting much competition from foreign players.”* Nor is he nervous about domestic players – *“I think my relationship with my customers is so good that I’m not expecting them to switch to other suppliers.”*

Internal capabilities and staff

When the owner took over the company in 2000, there was no coherent remuneration policy; many workers were doing the same job but receiving different salaries. *“One of the things I instituted was a salary structure based on grades.”* The owner introduced the Paterson grade system,⁴ a salary system based on grading job

⁴ The Paterson Job Grading System is a method where jobs are evaluated based on predefined criteria, a system mainly used in South Africa. It analyses decision-making in job tasks, and categorises jobs into six groups that are graded and grouped into two to three sub-grades. These factors include stress, individual tolerance, length of job and number of responsibilities. These all correspond to organisational levels. The six grades, also called bands, define pay scales.

tasks. For instance, the company nowadays pays salaries for boiler operators, assistant plant operators, handymen and grain handlers according to salary scale A3, categorised as unskilled labour.

Moreover, there is a 13th month included in the standard employment contract – *“the workers automatically get a month’s extra payment in December.”* The management team does a mid-year evaluation of the company’s performance – *“it’s not based upon the performance of the individual.”* If the company performs well according to the collective reward system, *“then there is an extra ‘14th-month’ payment.”*

In order to set up and benchmark the company’s salary levels, the owner analysed salary statistics in various manufacturing sub-sectors in South Africa – *“we aim to be on a par with the outside community, and we’ve kept that same curve for the last 12 years.”* In fact, the owner observes that the overall salary curve for South Africa is on a downward trend – *“within our communities, salaries are becoming more and more unequal.”* He is well informed about market opportunities because he tracks and analyses the sales figures of various industries and particularly food-related activities. His sales department monitors what is happening in South Africa, and he talks to customers to review the pricing of his products and benchmark against competitors.

The recruitment of higher managerial and supervisory staff with specialised skills is difficult. *“If you’re looking for cleaners, drivers and packers, the unskilled and semi-skilled, that is relatively easy.”* The company organises training for its staff. There is a tax arrangement for this within the framework of the South African ‘Skills Development Act’ policy. Companies have to invest 1% of their employment cost in skills training. If the company organises the courses, it can claim 80% of the training costs back. The company organises 2 to 3 days of internal courses per year. They review the fundamental concepts and make sure that everybody is up to date – *“it is a kind of skills maintenance.”* For instance, there is one refresher course on hygiene – *“we have to make sure that they understand correct hygiene practices.”*

External business and institutional environment

The owner sees huge opportunities in the food value chain from agriculture, via manufacturing, to food service providers. He considers this to be one of the largest employers in South Africa. *“Everybody looks at mining, but I think the food industry must be far bigger if you look at the broader value chain, not just the farming. It must contribute enormously to the economy.”* This is quite different from other industrial sectors such as the textile industry, which is having a difficult time because of competition from China, but *“this is not the case for fast moving consumer goods, such as foods, where freshness is an issue.”*

He sees new opportunities within the food industry in South Africa, in particular its micro components such as vitamins, speciality chemicals, stabilisers, thickeners, colours and emulsifiers, which are mostly imported at present. *“Micro components is a huge industry by itself. There are massive opportunities but we don’t have the intellectual capacity in South Africa. There are no entrepreneurs who say, ‘I can do this, let me build a factory to manufacture these components.’”*

The new investments mean that the company needs technical advice, and the owner’s technological partners are *“incredibly important.”* The company has worked with the same machinery suppliers, fabricators, process equipment suppliers and consulting engineers for the past 15 years. These are networks of commercial traders as well as suppliers of advice and consultancy. *“When you’ve got those relationships, it’s much easier to go to somebody and say, ‘Well, I’ve got this problem.’”*

The company has close relationships with scientists within the food science division of the Faculty of Agriculture at the University of Pretoria. One scientist is a world specialist in cereal chemistry, particularly malting barley and maize – *“I meet him fairly regularly on an informal basis.”* The company also offers internship placements for students from several universities doing their final year projects. The students do

not bring many new technological insights, according to the owner, but sometimes the company recruits former interns – *“it’s more of a way of recruitment.”*

Regarding innovation policies in South Africa, the governmental Department of Trade and Industry (DTI) offers several business funding opportunities. However, the owner is quite disappointed in these policy instruments, for several reasons. If a company engages in R&D, it can claim 150% back of the tax paid under a DTI programme – *“if you spend R10,000 on R&D, you can deduct R15,000 from your tax bill.”* However, the complex paperwork and the *“red tape”* was not worth the effort – *“I have been going through it and I just gave up, it was just impossible. I think that’s an area of policy that needs to be addressed seriously.”*

A problem is the *“quite unfair”* set of regulations for Black Economic Empowerment (BEE) within government industrial support programmes. To qualify for government funding, the business has to meet strict BEE requirements, apart from the regular requirements such as minimum business age, size of project and other technical and financial features. One critical BEE requirement is that a company is partially black-owned and managed. Moreover, the procurement of input materials and services should come from companies that are black-owned. The owner tried to submit an application for government funding last year. All the BEE criteria were met, except the one concerning black ownership.

The owner feels that over the years the BEE requirements have become stricter – *“this year in particular they’ve made it incredibly difficult.”* The owner thinks that it is not possible to secure government funding without having black partners, not just at the management level, but also at the shareholder and ownership level – *“eventually in order to obtain this government funding you would have to give away 25% of your company.”* He identifies a high degree of loyalty within the firm – *“but I wouldn’t like to confuse that with ownership.”*

The owner feels that these kinds of policies are squeezing the economy in South Africa – *“and it’s making it difficult for people like myself who have ideas, who want to expand. You’re boxed in.”* The difficult institutional procedures did not really limit his opportunities for growth. The owner says that it is not necessary to get government funding – *“I can also go to banks and other institutions, which I am doing at the moment.”*

3.2 Metal processing – train parts (100 employees)

This metal processing company manufactures doors, door-operating mechanisms and windows for trains, coaches and locomotives. It is located in a suburb of Johannesburg and was established 30 years ago. In 2003, the company changed ownership at the time of the launch of the BEE⁵ policy. The company was then sold to a consortium of black people, who still own and run the business today. The interview was carried out with the Chief Executive Officer (CEO), who is a qualified engineer from Technikon Witwatersrand. While working for the company over the years, he has also undertaken part-time studies, obtaining an MBA degree from the University of South Africa and additional courses in engineering management at the University of Pretoria.

In the past, the company was awarded contracts from state-owned railway enterprises, in particular South African Transnet. At that time, the government built locomotives at its own premises, but some 10 years ago, the government stopped producing railway equipment.

⁵ A racially selective programme launched by the South African government to redress the inequalities of Apartheid by giving certain previously disadvantaged groups of South African citizens (Blacks, Coloureds, Indians, and Chinese) the economic privileges previously not available to them. The score card records levels in terms of ownership, management structure and suppliers, amongst others.

International and original equipment manufacturers (OEM) took over. Companies such as General Electric, Bombardier, China South Rail, China North Rail and Alstom established production capacity in South Africa and started producing trains and equipment using the former government production facilities in Pretoria and Durban. As a result, this period saw a positive change in the demand side of the market. The company tendered for subcontracts, supplying parts and components to the newly established international OEM companies.



The government also launched the 'Passenger Rail Agency of South Africa (PRASA)' programme, under which new trains are developed and built by the international OEM companies. The CEO is happy that his company has been awarded several subcontracts for the production of cab interiors, coach doors, windows, hand rails, grab bars and windshields. Moreover, PRASA refurbishes 450 train coaches annually, contracting the work out to different firms. These contractors engage the company to supply various parts and components.

However, the CEO explains that demand has dropped in recent years. The commodity market in South Africa *"has now come to a standstill. There are fewer products to transport and to deliver."* Subsequently, some of the international OEMs recently instructed the company to scale down the originally agreed sub-contract volumes – *"the company is pretty much in a tight situation at this stage because of all of these reductions."*

Competition is also increasing on the supply side. The CEO knows of two recently established companies in the Johannesburg area that produce the same products, whereas *"before, we pretty much had the lion's share of the market."*

Internal capabilities and innovation

The company has an executive team that runs the business. They draft strategy and working plans that are subsequently presented to the board of directors for review and approval. In the tenders, sometimes detailed specifications are provided, whereas in other cases the company has to come up with a design and present the drawings to the contracting OEM company. The executive team also generates ideas from its R&D department and input from the shop floor workers. *"We say to the production people that we have a certain request for this product to be built. This is the concept that we think we should go with. How difficult is it to do that?"*

The company operates in a manufacturing subsector that is subject to considerable fluctuation. Sometimes the company has large volume contracts, followed by a period of low activity. As a result, the company has a core staff of 100 employees, and *"when there is a large order, we bring in additional people."* During the time of the interview, there were 201 people working in the factory for international clients and the PRASA project. The company's production staff have technical training from universities and colleges.

At present, it is not difficult to recruit staff, given the current challenging economic conditions in South Africa, as explained by the CEO. *"We have some old hands here but we also have to bring in some new hands."* When the economy is growing, it is always difficult to hire production workers, in particular welders. The nature of the work is labour intensive and the CEO looks continuously at ways to improve processes and productivity – *"there are always parts of the operations that could be more effective."*

However, automation of the production process implies that people are going to lose jobs, *“which is a critical and sensitive issue for the labour union.”* Regardless of the employment impact, the company simply does not have the funding for full automation at this point in time – *“without the funding we can’t automate and therefore you have to use manual labour.”*

The CEO hopes and sees the need to improve the quality of production by acquiring new technology, but to do this, the company needs serious capital investment money.



However, there is a challenge in convincing funding agencies, investors and banks in particular that there will be a return on such a long-term investment. The company has already submitted several requests and proposals to funders, such as the Industry of Development Corporation (IDC), without success so far.

The CEO’s ambition is develop the internal capabilities of the company to become an international player. In particular, he considers working with the international OEM companies as an opportunity to take advantage of their knowledge and expertise, to eventually compete on a global scale. The subcontracts of the international OEMs *“make us lift our production standards.”* He hopes to reach a point where the big train builders eventually say, *“this company is our number one supplier. Wherever they go to build trains and locomotives, they will take us along.”*



External business and institutional environment

The CEO feels that the external business environment in South Africa is becoming more challenging by the day – *“the market for railway parts and components has become very complicated.”* The mutual dependence in the network of contractors and suppliers impacts the work directly, in particular in case of delays that create uncertainty in work and staff planning and financial forecasts.

The PRASA, as one example referred to by the CEO, suffers from serious delays at present. Their lead contractor has to build a factory in South Africa first, which was not anticipated, involving serious production delays. Another contractor suffers from theft problems at their production facility. Eight kilometres of rail parts of a separate railway to manufacturing facility were stolen – *“they couldn’t proceed with the production work until the rail was repaired.”* These problems make it impossible to do financial forecasts for funding proposals to be submitted to the IDC, for instance, *“so we have now put the brakes on the whole process.”*

In this difficult market situation, the board of directors is considering exploring opportunities in other transportation markets so as not to focus solely on the railway sector. The CEO is aware that the company cannot provide parts to other transportation industries because the company standard is not what is required to produce these parts – *“our facility is not up to that standard yet.”* Thus the technology challenge remains the same: the company has to upgrade and improve its current technologies first.

The company is also looking at a wider network of customers – *“we have been to Mexico on the invitation of the South African ambassador.”* The CEO sees another new opportunity in South African lead contractors entering the emerging railway markets in other African countries. The company supplied some of the parts to South African Transnet Railway Engineering, who build trains for Botswana – *“we are hoping that Transnet’s strategy is to venture into the African market. We will piggy back on them.”*

The CEO is positive about the government’s BEE policy. There is also an additional government policy to promote black ownership in businesses and industry by supporting start-ups. However, the CEO mentions that the government policies look good on paper but their implementation is more complicated. Recently, the company approached government agencies for support and found out that it no longer qualifies because of its size and years of successful operation. This means there is no easily accessible government support for the company. *“The government talks of making life easier, but the implementation makes it more difficult.”*

One of the board’s development strategies is acquisition of other businesses, in order to develop into a group of companies. The CEO is currently identifying similar companies that are for sale. In terms of promoting black-owned industries, the CEO believes that it would make more sense to make government funding available for business acquisition. Taking over a going concern with an existing customer base makes things easier for the black industrialist – *“it would be a quicker way than developing a business plan for a business start-up and starting from scratch.”*

In government related contracts, there are numerous obligations. For example, in a government tender, the company has to indicate how many people are to be allocated to the project. Once the tender is awarded, the company has to submit a monthly report to the government to demonstrate that it meets the employment creation expectation – *“those are the obligations placed upon us.”* The CEO does not necessarily see them as negative, but simply as the government trying to drive their employment creation agenda. The company is at a stage of development that means it is not exempt from such requirements – *“you have to comply.”*

The CEO mentions that his company has a constructive relationship with the labour union, the National Union of Metalworkers of South Africa (NUMSA). The only time there was a solidarity strike was in July 2014, and on that occasion the dispute centred not on an issue within the company, but one within the industry more generally. In discussions over labour issues, the company communicates openly with the union and presents evidence to support their position.

The company does not have links with universities or technical institutions to advise them on technical questions or problems. In most cases, the technical problems relate to the equipment – *“so we use our equipment suppliers to deal with those issues.”*

Regarding the CEO’s perspective on the developing economic situation in South Africa, he thinks that the government needs to come quickly out of the *“current political chaos.”* The situation could stabilise quite quickly because the companies, capabilities and infrastructure are still there – *“the key problem is peoples’ negative perception of the South African market. Once the political situation is fixed, then the perceptions about the market will change accordingly. Foreign investors will come back and consider South Africa an attractive destination.”*

3.3 Chemical – coatings, surfactants and emulsions (36 employees)

This chemical systems company is located in an industrial outskirt of Johannesburg and is owned by a couple who started their business in a garage with 4 employees in 2006. It produces various advanced and modern

chemical products such as floor coatings, environmentally friendly surfactants⁶, silicone emulsions and wax products. The company has high-tech and advanced production systems – *“to chemically put something together, there’s some very easy stuff and there’s some very difficult stuff and what we do is difficult.”* The owners explain that emulsion products and surfactants require the mixing of two chemical products, which involves an expensive, delicate and sometimes dangerous process. The company sells these emulsified products as intermediary products. *“The silicone emulsion in particular is one of the new age surfactants of the world, for the mining industry and for the road construction industry, for instance.”*

At the start, the owners saw an opportunity to produce environmentally friendly water-based surfactants – *“because these were very scarce in South Africa. A lot of harmful solvents are produced by large enterprises”* – and to substitute imports of these harmful chemical products by locally manufactured ones. All the raw input materials are available in South Africa, according to the owners. The couple sees the advantage of running a small company, mostly because it allows flexibility. They receive many requests and orders for high-tech products – *“sometimes it is not in our line of work, but the customers know that we are innovative and flexible.”*

The business expanded steadily. After three years, it moved to a 300 square metre factory, and today, has expanded even more to a 4,000 square metre site with 36 employees. The couple believes that their success was based on selecting products that were not locally produced – *“imported products, because of our unfavourable exchange rate, became very expensive. People pay quite a premium on imported products.”* Moreover, most of the imported cleaning products are water-based – *“so you bring in 40% water. You can make it cheaper here.”*



They also produce concentrated washing soap, detergent and dishwashing liquid. Users dilute the concentrate with plain water, adding some salt, to get 10 times more volume.

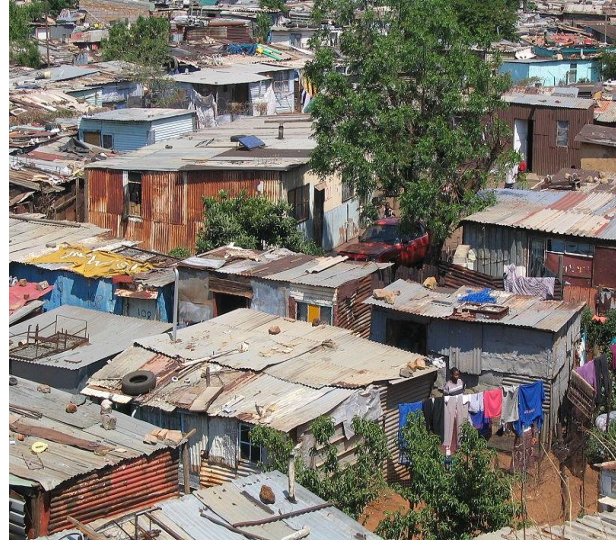
Originally, their idea was to develop the concentrate for islands, like the Seychelles, which lack raw materials, and for western and northern Africa. However, today the concentrate sells well to household-based entrepreneurs in the townships in South Africa. Small shops dilute the concentrate with basic (manual) equipment and repack the dilution in smaller quantities. As retailers, they sell it in their neighbourhood, amongst others in the *spaza* shops⁷. The township entrepreneurs use all kinds of ways to package it, even half plastic bottles. The company’s name does not appear on the packaging. *“The idea is not to promote our company’s name. We just sell the concentrate and provide the backup. It’s for them to do their own thing.”* The company assures good quality and consistency of the concentrate.

The owners see that their company has the financial capability to invest in raw materials – *“You can’t buy raw materials efficiently unless you buy in bulk. We buy in bulk, we transform it into the concentrates.”* In the townships, they have a high quality product available locally in smaller quantities at affordable prices, *“and they do not have to go to the large stores or shopping malls outside.”* The company provides some instruction, training and support to the small entrepreneurs in the townships.

⁶ Surfactants are compounds that lower the surface tension (or interfacial tension) between two liquids or between a liquid and a solid. Surfactants may act as detergents, wetting agents, emulsifiers, foaming agents, and dispersants.

⁷ A *spaza shop* is an informal convenience shop business in South Africa, usually run from home.

While acknowledging the commercial motive, the owners also prioritise demonstrating and applying social awareness – *“we have a responsibility to the black poor communities as well.”* Their marketing approach enables unemployed people in the townships to generate income. The owners see that *“this type of marketing creates employment and value in the communities.”* At the same time, the owners see new problems arising in the townships. The *spaza* shops used to be black-owned. Nowadays, they are owned by Indian or Lebanese living elsewhere *“who control all these spazas.”* They take business away from the locals and the money is not going back to be reinvested into the township.



Internal capabilities

The company staff is very loyal, according to the owners – *“the 4 people who joined in 2006 are still working for us. We are very much aware that loyalty comes together with how the staff is treated.”* Over the years, while the company grew, workers brought in family members and friends. They admit to having had tough times and seriously heated debates and meetings – *“like in any family, we have our arguments.”* The company provides, amongst other benefits, holiday work for staff children when they are at university. In some cases, they took permanent jobs in the company – *“we became a pretty big family.”* The couple provide extra care such as assisting with schooling and serving one meal a day – *“especially for the young guys, as they’re all single and nobody cooks.”*

According to the owners, it is easier to look after the staff in a small company – *“the big companies can’t do these things because they run on a corporate level.”* The owners, in fact, see strong social awareness among smaller companies in South Africa, while *“the big companies seem to be removed from the grass roots.”* The couple underlines that large corporates are run *“by accountants and the policies come from the top.”* The large companies think only of profits – *“once a firm becomes a large corporate, all those things go out the window, because you’re no longer in control of your own social awareness.”*

As a small company, innovation activities have to be funded from the firm’s own resources. The company has just been awarded ISO 1001 status, involving an information technology system, in particular information processing and management. The owners see the necessity to be innovative, although it requires a lot of effort and extra time during the weekends – *“that’s the secret about innovation: that you work under difficult conditions and you are still able to make it work.”*

The employees quite often advance ideas for innovation. The senior blenders sometimes find ways to improve the process and make it more efficient. Within the decanting department, workers suggested modifying some of the pump parts – *“we encourage that a lot.”* The company rewards the *“innovator of the month”* with a money prize.

The company does not have a large budget to spend on new equipment, which is expensive in South Africa. The owners buy second-hand equipment and alter it to suit the various production processes. The company has, for instance, a continuous emulsion process, which is normally a batch process involving expensive

equipment. The technical staff experimented to get a continuous process they could build themselves. For the staff on the shop floor, that was the really innovative part, being part of building the system – *“it was like their child, for some of the guys on the shop floor.”*

The company receives a lot of applications from chemistry graduates. However, the company cannot use these applicants *“because they lack practical skills and we need practical chemists. It has to be someone who understands the request or order and can make it happen.”* Regarding staff expertise, the owners regret that these practical manufacturing skills are not being taught – *“they’ve disappeared, so it’s up to us then to train people.”* The owners feel that practical skills and experience are lacking in the South African labour market. *“The older guys, they’re disappearing, they’re not passing the skills on.”* A former partner and *“unbelievably fantastic chemist”*, left the country because he was a victim of crime.

External business and institutional environment

The owners foresee difficult times for manufacturing in South Africa. *“The manufacturing industry is just about the worst it’s been in probably 25 years. Manufacturing is dropping about 8 to 18% per year.”* They think the reason that they are growing is that other manufacturers have left the chemical industry – *“we are getting more and more requests every day for contract manufacturing.”* According to the owners, South Africa now supports the bigger corporations, while the smaller companies, which actually provide the bulk of jobs, are not supported.



The couple is looking for possibilities to export to West Africa – *“we were discussing the export of the concentrates to someone from Nigeria. However, that did not work out.”* They owners learned that in Nigeria, clans of families control the harbour, the police and import duties authorities – *“an ordinary person cannot do business with Nigeria because it’s a different way of trading.”*

The company does not patent their products. The owners mention that anybody can produce their products, because technical information is widely available – *“but you need an exceptionally good chemist.”* Some of the large competitors have tried to copy and produce the concentrate but failed. Nonetheless, the company is looking at the possibility of a patent.

There is acknowledgement by central and local government of the value of the ‘base of the pyramid’ marketing approach in the townships. It does increase the scoring in a BEE certificate. However, it is not enough to apply for government funding to expand the business, for instance – *“we do not qualify because we are a level 5 BEE. Our company ownership structure is not right. We’ve got to have at least 51% black ownership.”* The owners are exploring possibilities and options to give away ownership, but reluctantly, because they set up the business themselves. Lately, black businessmen have approached them and suggested a partnership with the owners – *“they can’t do the manufacturing, but they’ve got a lot of access to government money and grants. They can win tenders and so on.”* The owners are considering manufacturing on a contract basis for them. The couple sees that the intention of the grants and policies is good but the implementation is not – *“there is money for grants for the manufacturing industry. I wouldn’t say all of it, but most of it is going to unscrupulous people.”*

The labour union regulations are very strict, according to the couple – *“it’s very difficult: once you’ve employed people, you can’t just get rid of them if they don’t conform.”* Employers are being much more careful about who to employ and what for.

The owners say that it is a *“scary question”* what their business will look like in five years’ time. On the one hand, the owners still have plans to expand because there are sufficient economic opportunities and their current production facility is getting too small. Then again, the owners still intend to keep the business small – *“it is better to protect the staff’s interests as well as our own, obviously, as owners.”*

A more difficult issue is government regulations. The company is a *“closed”* corporation, funded by investment money from the owners only. Because of the company’s increasing size, the owners are at a point where government regulations will compel them to change into an *“open”* corporation, with external investors meeting the BEE standards in terms of ownership – *“we’ve been warned. They’ve given us 2 years.”* The owners are very hesitant to grow further and become corporate – *“we are very afraid that we’ll lose what we’ve got now.”*

3.4 Textile and garments – uniforms (60 employees)

The owner is a young ambitious black woman who started her business in 2008. Two years prior to this, she had a fixed job in a large corporate enterprise. As a personal side-line, she started to produce clothes and uniforms on an informal basis and soon won several contracts. At that time, she outsourced the actual production, but not long thereafter, she became somewhat *“frustrated”* with her contracted suppliers’ long delivery times – *“the supplier prioritised their direct contracts and own work,”* so she decided to set up her own production facility.

Meanwhile, she secured more and more contracts, which strengthened her confidence to proceed. From her fixed corporate job salary, she saved for about 4 months, enabling her to buy the first machines for her production facility. In a partnership with a textile worker from Maputo, living in South Africa, she registered her business. At present, the company has a capacity of 60 machinists, and mainly produces uniforms, working clothes and protective clothing. The products are not for the retail market. Clients are typically security companies, police and laboratories, to name a few.

Most of the contracts are obtained via tendering. Amongst others, the company has supplied uniforms to divisions in the SAPS (South African Police Service). *“We have not been aggressive with marketing because the demand from the SAPS alone has been overwhelming.”* Over the years, the company became familiar with and experienced in tender submission procedures. In the tenders, *“compliance is the biggest thing in our industry. SABS⁸ is very strict.”* There are many compliance certificates to which tenderers have to adhere.



The factory location she currently rents is a government owned building. It is not on the government’s asset register because during the Gauteng train construction works, the building was to be demolished, but the constructors decided otherwise. She is now in the process of getting it back on the asset register and hopes to

⁸ South African Bureau of Standards.

procure the site. The building is expensive but *“what we wanted was to be central.”* The firm’s clients are located in Pretoria.

Competition has not been a problem, given the levels of demand. She also acknowledges that *“what has helped us is the fact that this is a black female owned business,”* which means that its BEE scores, required for SAPS contracts, are high. *“Of course, the product quality has to be good. We have got to be competitive. There are many well established companies that have been around for a long time, so we have got to match those standards.”*

Internal capabilities

The owner has a technical background in textile manufacturing from the University of Witwatersrand in Johannesburg. She equipped herself with management skills to set up the business. Running the business is very challenging and exhausting sometimes. She keeps motivated because she is *“passionate about the industry.”* At a young age, she had been making her own clothing. She feels that producing uniforms and clothing, for the government in particular, *“is patriotic.”*

She sees that being a black woman owner gives an additional advantage in BEE, but at the same time, men in South Africa often fail to take her seriously – *“the local culture demands and expects that you serve your husband and you do all the household work.”* She can afford to have a domestic help running her household. She was not really exposed to the local culture but she sees that in the case of black women in business, *“there is always that degree or level of being undermined.”* Regarding her workforce, she prefers to work with men, for one reason – *“they don’t talk a lot.”* The male workers accept her authority *“the moment I walk in. They know when the boss is here.”*

In her family and group of friends, people consider her as an example. *“They think I am crazy and they think that maybe only I can do this.”* At the same time, she is a modest person and does not like to show off, *“which is a personal thing.”* People around her say that she should bring her success story to the media. She sees the importance of having a PR person, but she just does not want to take that role herself. She prefers to work in the background – *“I really enjoy the technical work and don’t like the spotlight at all.”*

Innovation

In government tender contracts, a requirement is to use raw materials and inputs from South Africa. That implies that the fabrics and other textile materials for producing the uniforms must be acquired from South Africa. There is, however, a serious problem with the supply chain. Several fabric mills have closed down and now the industry is too small to meet the demand. The suppliers cannot service the company in time – *“we just don’t get enough, and this is really affecting my business.”* The fabric does not comply with the quality standards and delivery is always late – *“they promise a delivery time of two weeks because they want to secure a job. Then after six weeks you haven’t got your fabric and the quality is below standard.”*

The input problem became a major challenge – *“I wait, and wait, and I lose my staff.”* She is currently doing ceremonial jackets for a SAPS contract – *“it is not a simple design to make.”* At the start of the contract, she had trained 40 people for this specific job.

“However, the fabric is late and the deliveries that I got were either defective or did not meet the standards that I want.” She could afford to pay the 40 staff for up to a month without work for them to do, but after that, 30 left to find other jobs – *“all the investment and training, then the salaries for 40 staff for one month is all gone. I am only left with about 10 of the 40 trained staff.”* She was supplying the Anglo-American mining industry with overalls – *“I have lost those lucrative contracts because I just could not get the fabric.”*

In the absence of a good fabric supplier, she took the courageous decision to set up her own fabric mill – *“then we have full control of our value chain.”* She does not have experience in establishing or running a mill. She is working with several consultants to prepare a proposal to submit for a grant to the DTI. This government department has an industrialisation grant funding programme, open to receive proposals for co-funding of up to 50 million Rand (3.7 million USD) per company.



She found a Korean company, a supplier of raw material fibres for fabrics, that is willing to become a strategic and technology partner. Whereas the DTI will only provide funds for the mill, consultants from the IDC and its corporate social investment section (CSI) will offer technical advice on a commercial basis.

The DTI co-funding will not be enough in building her mill, but she is confident of finding other investors. She believes that if the DTI becomes the base funder through the grant, then it will be easy for anybody to join. The idea is to attract private investors, not necessarily banks – *“I don’t think the banks will be interested. Clothing and textiles are no longer viewed as viable in South Africa.”* She is convinced of the importance of setting up the mill – *“I will certainly fail, if I don’t incorporate that value chain component in my business. I have lost enough contracts.”*

Regarding the employees, she hires the workers per contract. At present, she has mainly foreign workers from the surrounding African countries (Mozambique, Botswana, Lesotho and Swaziland). She explains that these workers are cheaper, yet the company pays above the industry standard rates. According to her, the foreigners are more dedicated and work harder – *“the South African labour force is less productive. That is just my personal experience. They are often absent, they go for weddings and funerals. There is always something going on.”*



However, she is anticipating trouble because of the foreign labour force, which the labour union does not accept. Government tenders, although strict regarding South African input materials and BEE criteria, are not currently so strict on the composition of the labour force. Then again, she knows that she has to comply because sooner or later the government will audit the funding. She envisages transforming her labour force into at least 60% South African and 40% foreign.

External business and institutional context

The business environment and demand for her products in South Africa is promising, in her view. She gets positive responses and requests – *“I think it is to do with the quality and service that we have been rendering to our current clients.”* She knows that SAPS has recommended the company to the traffic police and other police services. The tendering companies contact the company directly, asking them to submit bids. Moreover, she plans to go international soon, having received enquiries from companies from Namibia or Botswana, for instance. The owner has attended several exhibitions, to look for new technology, to see what other firms are doing, and to try to be innovative as well.

Regarding government policies to promote manufacturing SMEs, she feels that the government policies and procedures are all well written but the implementation remains poor. She wonders whether government staff actually understand the ins and outs of manufacturing enterprises. Except for the DTI funding request for the fabric mill, she does not want to knock on government doors for subsidies *“because it is a very complex process, and it would take too much time.”*

She did not borrow from a bank or external funder for the contract. Banks were reluctant to give her credit because she has to show a *“footprint.”* There are some government funding programmes, *“but these are just useless.”* The interest rates are much higher than the banks’, in the order of 17.8% per year, and the applications takes too much time, according to her.

As mentioned earlier, the labour union is not yet involved. However, she plans to establish a relationship *“because recently they got to know about us.”* That does imply that she will appoint South African staff, registering them on the council and getting them unionised. She will follow all the guidelines and what is required – *“once I fully comply, then I don’t have issues. I have nothing to worry about.”*

Regarding the future of South Africa, she is quite confident. As a matter of fact, she has chosen to be positive about South Africa because a lot of people think that the country is going downhill, *“that we are going to have junk status.”* As long as the SAPS exists, she believes she will be in business. She plans to further specialise in protective and industrial clothing, in particular fire retardant garments – *“that is what we have identified and there is demand in that industry.”*

3.5 Automotive – truck chassis (55 employees)

This truck manufacturing company is located in Pretoria. It assembles trucks from the frame, engine and chassis, supplied by the OEM, and complements the truck with the appropriate body features ordered by the customer. The interview was held with the manager of the company. The company specialises in tipper, dropside and flatdeck truck bodies as well as water and vacuum/sewage tankers – *“that’s where our strength lies.”* The company is a relatively well-known brand name in the Gauteng and employs 55 people at present.



The company was established 19 years ago by its former director, who retired in 2014 and is still the owner. Having been involved in the truck body building business throughout his career, he learned to develop his own designs and to manufacture truck bodies, which enabled him to establish the business. There was considerable risk involved in this, in terms of management and marketing, rather than technical expertise, according to the manager – *“truck building isn’t rocket science. It’s very straightforward.”* In managing risk today, the manager’s focus is to keep production costs as low as possible, while still producing a product that

is the best on the market – *“that’s the only way that you can deal with risk.”* The manager also strongly believes in the importance of excellent customer service.

The company’s clients include, amongst others, South African dealers of UD Trucks, Mercedes Benz Commercial, Isuzu, Iveco, Scania, Hyundai and Tata Commercial Vehicles. These dealers place orders on behalf of their end customers, specifying a particular type of body and truck, according to the customers’ requirements. The company assembles the tailor-made product, and delivers it to the dealer. *“As far as the end customer is concerned, we very rarely deal with them directly. We mostly deal with dealerships.”* The end customers typically are private companies in the construction and mining industries, or public service providers within municipalities.

Typical contracts are for a relatively small number of trucks, covering a few months of work – *“a single contract per year is not going to make the business viable.”* The manager is quite confident about the future, as the company has work for the next two years. A few months ago, the company was *“lucky”* to get a larger contract for building 9 tankers, *“but in this business, you are not always certain if you’re going to have work for the next month.”*

Marketing

Amongst other management tasks, the manager takes care of marketing – *“I basically do a bit of everything.”* The company does not do a lot of advertisement and it has never had a sales representative or marketing manager – *“we have been very lucky so far that we get sufficient requests for quotes followed by actual orders.”* The manager often finds that customers come back – *“apparently, the price was just right and we get new orders. I can’t really place my finger on what makes the marketing work. It is not only about the lowest prices, but also the relationship with the customers.”* The manager also sees that the production time to manufacture the specific body is critical – *“that, I would say, is the most important factor.”*

The company is increasingly approached by potential customers from neighbouring countries – *“I think it has to do with our website. We get a lot of queries from people who visited our website and also from word of mouth.”* The manager scans competitor websites to see what they have to offer and how it is presented – *“I’m sorry to say that a lot of our competitors don’t really care about the design and usability of their website.”* He doubts whether other competitors have explicit marketing strategies.

The company is also increasingly approached by so-called ‘tenderpreneurs’. *“This term has been developed specifically for South Africa”* and refers to black businessmen who win government or municipality tenders because they meet the BEE criteria. They themselves do not necessarily have experience or production capacity. They tender for contracts as middlemen and approach companies that cannot win contracts because they do not meet the BEE criteria in terms of black ownership, such as the truck company. The company regularly teams up with a tenderpreneur at an early stage of a tender process – *“we receive the tender documents, we indicate what it requires and we make technical recommendations for the tenderpreneurs.”*

Innovation

Most employees are production technicians, following instructions for building the trucks, which are produced to a set design. Occasionally, a customer orders a special feature, *“and we have to figure out how we are going to meet this requirement. Trial and error is basically how we do it.”* By developing these special requirements, the manager sometimes discovers new design features of the body itself, which turn out to be better than the original ones. Small changes can make the manufacturing process cheaper or quicker, or result in a more user friendly product.

The company does not have patents because the manager does not see how to protect the design. It is also a matter of pride, according to the owner – *“a lot of the body builders believe that their design is the best one.”* Sometimes the manager sees an interesting idea in a competitor’s design and takes this into account – *“I wouldn’t say ‘copy’ because you are obviously always going to try your own type of design.”* These differences in general are small.

The company recently did some restructuring to save on costs in the production process and buying parts from cheaper suppliers. The company uses expensive equipment, which is purchased as a longer term investment – *“it takes time and thinking before deciding what kind of equipment we purchase.”* As a consequence, it is not possible to be flexible and change the production processes. Further lowering production costs would mostly mean newer equipment, according to the owner. The company purchases a lot of components, *“but we could manufacture these parts ourselves, if we had specialised equipment.”* The machines for this are expensive: the manager estimates that establishing this type of business with the proper equipment and facilities would require an investment of 15 to 20 million Rand (1.1 to 1.5 million USD) – *“the question is, how long would it take us to reap the benefits?”* This uncertainty is the reason that the company continues to purchase from external suppliers.

Internal capabilities

Most of the 55 workers have worked in the company for five or more years, some since the beginning. In the past year, the manager had to fire several workers who were not productive – *“no matter what steps you try to take, they seem not to care.”* It is not difficult to get new workers in Pretoria and around. However, higher qualified and experienced staff expect a certain salary and *“unfortunately as a company and in our industry, we cannot afford those salaries.”* Most of the time, therefore, the company engages low-skilled workers with basic skills – *“as long as they have some expertise and experience and they are willing to learn, then we take them on board.”* The company provides them with instructions for the specific truck body designs.

The company does not currently offer staff training on a regular basis, but the manager is planning to do so, *“hopefully from next year onwards”* on certain aspects of manufacturing and on health and safety issues. The company does not have a reward system for the employees, which the owner in fact regrets and intends to implement in the future. He sees the importance of looking after the workers, who are *“the creators of the product. I want them to feel important in making a valuable contribution to the company.”*

The manager sees an issue in the current *“blurred”* organisational structure of the company. The result of this is that workers are not appreciated for what they are doing. *“When you do come with an idea, and you try to get it across, you don’t unfortunately get the response that you hoped for.”* Another issue, according to the manager, is the complacency of the workers on the shop floor. They have set working routines and practices, which are difficult to change – *“if you do bring in change, you get a lot of resistance.”* The manager’s view is to upgrade the facilities to shorten production time and bring down costs. He did not succeed in convincing the workers and the owner – *“they do not want to rock the boat. They don’t want to make waves. I think this has to do with business confidence in the country in general.”*

External business and institutional context

The company faces little competition because the manager seeks to serve a certain segment of the market that his competitors do not address. The company is not the cheapest body builder in Pretoria, which relates to the quality designs for robustness and the way the bodies are manufactured, *“which is confirmed by feedback from our customers.”* The competitors build low-cost bodies quickly – *“they get longer term contracts involving 50 bodies or so.”*

Running a business is risky, especially in South Africa, with the current economic and political environment – *“it is difficult to predict what the future holds. Business confidence in South Africa is at its lowest for 22 years.”* At the same time, the owner sees a lot of business opportunities for his company on the African continent. Recently, the company has received orders from different dealers in neighbouring countries. In fact, the company just started to export – *“export is very small at this stage, but there is so much potential for our company.”*

The company gets most of its technical knowledge, advice and ideas from the various OEM component suppliers, who are experts in their technology fields – *“for instance, the owner of the hydraulics business, where we get the components from, he is an absolute genius in that field.”* The suppliers, seeking for contracts, often come to the company and talk over ideas and solutions. The company is affiliated with the South African Vehicle and Body Association – *“it’s an association of body builders that comes together. They mostly complain about regulations and they don’t really achieve anything.”*

The manager is not positive about the institutional context. He believes that South Africa is one of the most highly regulated countries in the world for running a business, as regards filling out forms, BEE regulations and labour unions. In government application procedures, it takes months before the department concerned gets back with feedback, in his experience. Vehicle registration is a good example. Every manufactured truck body requires a NaTIS⁹ number, issued by the National Regulator of Compulsory Standards. In order to get the number, a manufacturer has to hand in an application, which is reviewed and corrected if necessary and the number is issued. Previously, the application procedure was fast and transparent, only taking a week. *“Now you have to wait for months. When you try to call them for feedback on the progress of the application, it is impossible to reach anybody.”* According to the manager, there are regional differences in these government agencies, even within the suburbs of Pretoria – *“a government office in Silverton would provide you with much better service than the same government office in Centurion.”*

The manager sees that labour unions have gained a power base in South Africa in the past 20 years. He feels that the unions try to influence managerial decisions too much, *“which isn’t necessarily a bad thing, but the interference has been done without consultation.”* The manager expects strikes within the company in the near future – *“if you have a business in South Africa and most of your work force is part of a union, then you can expect a strike at least every second year.”* The strikes mostly concern salary, safety issues and working conditions. The manager feels that the regulations for a safe working environment are too rigorously practised by the unions – *“if you don’t comply with those types of regulations, you run the risk of being closed down.”*

In fact, over the years, the manager feels that the unions have become more and more powerful, but also that the South African business community is now becoming fed up – *“we’ve had enough, the labour unions and government expect us to give you something which we cannot afford. If we do what they want, then we have to close our businesses.”* The manager sees that the unions and government are *“very much closely knit. What unions say becomes government policy.”*

Moreover, the manager sees that South Africa has entered a stage where business is fuelling corruption *“because to get something done you need to pay somebody. It’s becoming a culture.”* Up to now, the company has not been involved in corruption practices, but the owner knows about legitimate businesses *“that get frustrated and are willing to give money under the table.”* The frustration of business in dealing with the government is not limited to white people. A 100% BEE company will win a government contract

⁹ The NaTIS is the national register and asset that stores, records, manages and enforces the requirements of the National Road Traffic Act. It provides for the registration and licensing of vehicles.

but *“that doesn’t change the fact that they have to deal with government departments, and there are the same frustrations.”*

3.6 Textiles and garments – curtains (70 employees)

The company manufactures and sells a range of textile products. The business is owned by an Indian family that has been in the textile business in Pretoria for about 25 years. The interview is held with one member of the family, a young manager who manages the curtains section.

His father started as a textile wholesaler. When the young manager joined the business in 2000, he was 20 years old. At that time, the family changed from wholesale into retail textiles, dresses, clothes and traditional fabrics. The family opened up three sections in a shopping centre. Soon thereafter, the young manager identified a bigger market potential in curtains, and opened the curtains section – *“and if you look at it now, it was the best thing we did.”* Today the family business employs 70 people, including a curtain manufacturing section of 30 workers.

In the Indian family business, the father *“is the driving force behind the business.”* From a young age, the manager used to come to the business and help. He learned how to talk to the clients and to sell. He also learned the South African Sesotho language, traditionally spoken around Pretoria, *“which is a major advantage for local trading.”* Apart from himself and his father, two other brothers are also in the business as equal partners in the different sections. *“It is not that my father is the director. Everybody has their own say.”*



The business is located in the outskirts of Pretoria. The young manager explains that the location of their business became a textile hub over the years. In the beginning, there were only about 4 textile retailing companies, whereas today there are about 20. People know the area because of its reputation for cheap prices. The young manager feels that competition is good for his business. The other firms try to copy their success in selling curtains, but the young manager is confident that he is ahead of his competitors because of his new trends and designs – *“we are always trying to innovate with regards to bringing in new products. I always look behind me to see if they are trying to catch up with me.”* The young manager also witnessed competitors collapsing because they failed to innovate.

Most companies in the area have an Indian family background. In the apartheid era, these families were living in the Prinsloo Street area in Central Pretoria. Under the regime, they had to move to the outskirts of Pretoria – *“we were pushed here and we thrived.”* The Indian families started to jointly buy property, several blocks of buildings around the small market place under a block share scheme. The founding Indian members put in money and purchased the property in the complex, and other Indian families were subsequently able to buy shares. The young manager too has shares in the area. *“The initiative was taken by our Indian parents, to ensure that this land was never lost again.”* For the past 5 years, the manager has been one of the 12 directors of the board of the block share scheme that administers the complex.

Besides his private clients in Pretoria and around, which form the bulk of the customer base, the young manager has commercial customers who are commissioned by government agencies such as the DTI. These customers ask for quotes, and the firm sometimes wins the order and sometimes not – *“and that’s fine.”*

All the investment in this family business is funded by private money, saved over time. The family never took loans or external funding – *“my Dad’s concept has been to buy what you can afford.”* The young manager indicates that the family members are not *“extravagant people, but we live comfortably.”* They do not owe money to any of their suppliers. *“Funnily enough, our bank manager came in today and offered us a bank overdraft of R450,000 (34,000 USD) but I don’t feel the need for us to take it.”*

Innovation

Some 10 years ago, the company also started manufacturing, because the manager realised that his clients went to other companies to stitch the curtains into final products. Starting with one person, he now has a small factory in another block on the premises with about 30 people sewing curtains and other items. *“I am very happy with the progress from where we were to where we are.”*



Another change concerns the types of textile products – *“since the clothing industry is more or less dying.”*

New types of economic activities emerge, such as catering services, which require textile products such as tents, chair covers and table cloths, *“and we manufacture it. It is not complicated at all.”* The young manager also includes home furniture items in his curtains section. Initially, the company started manufacturing chair covers. Now he assembles whole chairs. They outsource the hardware production of the chairs – *“in that sense, we always keep improving and even in the textile area, we are always looking at the latest trends.”* He has started a joint-venture with a furniture company to use textiles in furniture products.

His father suggests most of the ideas for new product development. Input also comes from the floor sales managers, who have a good sense of where the market and the new products are going, since they receive calls from clients who indicate what they are looking for – *“the feedback from clients provides you with direction.”* The family members regularly meet to discuss new products and initiatives – *“but we are so busy, so we do it very impromptu.”*



Internal capabilities

For the young manager, one of the key factors in his success is that clients are comfortable – *“having a good relationship and a good experience.”* The manager thinks that retailers sometimes think too narrowly in terms of only being a retail outfit. He feels that retailers have to think outside the box and say that *“on top of retailing, I provide good service, I build relationships with clients, I have a brand name and reputation. That will allow me to put anything on this floor here.”*

The workforce is of diverse ethnic descent, including Indian, Pakistani, South African Sesotho, but mostly Malawian. Some of the sales ladies have worked for many years with the company. The young manager has a preference for Sesotho speaking sales people because most of his clientele are Sesotho. They communicate

very well with each other – *“when they walk in, they immediately feel at home. The key is speaking the local language.”*

He recruits new staff through references – *“I do not hire off the street.”* This is not the best way to recruit, but it provides some security. The young manager only hires trained staff for manufacturing, people who have the required skills and basic knowledge. He sees the importance of creating a good atmosphere among his sales staff on the shop floor. If he has an argument with a member of staff, he talks directly to the person, rather than *“hold it in until it becomes bitter. I would rather reprimand and then move on. My staff also knows that.”*

The technology in the manufacturing workshop is very basic and involves simple machinery. The owner is aware that much better technology is available for curtain manufacturing. Then again, the machinery is decent and *“it is sufficient for what I am doing right now.”* If he is going to undertake higher quality production, then he has to invest substantially in better machinery.

Space is a major hindrance for the manager. He acquired several other buildings around the market but is still short of space – *“I can’t grow left, I can’t grow right.”* He does not want to move to another location in Pretoria because the customers know his current location. Then again, potential new clients are sometimes reluctant to come to the textile complex. The company has attended exhibitions in several malls in Pretoria, where many people were interested in the products, but the moment they heard of the firm’s location, they no longer wanted to come.

External business and institutional environment

The manager sees problems emerging in the textile hub. The South African Revenue Services (SARS) raids the area once a month because illegal foreigners (Somalian and Ethiopian) are trading textiles without registration – *“they do not pay tax and they sell fake goods. It creates a bad image for us.”* The building complex was designed for 140 traders, but today has 250. All the retailers utilise the same infrastructure, such as parking, water and sanitation. What makes things worse, according to the young manager, is that illegal retailers have started to bribe the SARS officials. That breeds more crime *“because the fact that an official is taking a bribe means that he himself becomes a criminal.”* The manager never gives bribes *“because once you give in, you will have a guy coming in every day at your door.”* Another concern is the informal hawkers in the textile hub, who sell at the entrance and in the parking lot. They cause a lot of inconvenience, *“which is a city-wide problem.”* Recently, several Indian families have hired security guards – *“there was too much criminal activity going on around here. The security has brought a little bit of order.”*

The young manager sees that Indian families have built a good relationship with the government. They have approached the city government to ask for help to improve their circumstances. Earlier, they were received by the former ANC mayor, who has approved a development plan for residential areas nearby, which will be good for business in the area. But more and urgent action is now required to prevent the area deteriorating. At present, the Democratic Alliance (DA) is in power in Tshwane. The Indian families have agreed a meeting with DA representatives and the new mayor – *“we are ready to invest but we cannot invest billions unless they (the government) assist us. We are trying to engage with the government as much as possible.”*

Regarding official institutions, the young manager used to be *“nervous”* about the SARS, labour unions and the Commission for Conciliation, Mediation and Arbitration (a dispute resolution body established with regard to labour relations acts). While doing business, he quickly understood that a company has to comply with the regulations and cannot just fire a staff member, for instance. He learned all the procedures and requirements *“the hard way along the years.”*

He has never approached a government department or agency for funding. Actually, he thinks that there are opportunities for government funding, for skills training for his manufacturing staff, amongst others. The manager acknowledges that he did not go into that – *“that is actually partly my fault.”* He is quite convinced that he qualifies for government funding because the company is compliant in every way *“and the DTI knows us by name. They trust us and know that our services and products are good.”*

3.7 Pharmaceutical – homeopathic medicines (100 employees)

The company manufactures homeopathic products as complementary medicines. The company was established in 1963 by a South African homeopath who developed several remedies and started the business out of his garage. Over the years, the company grew into a medium-sized business of 100 employees. The company is situated in an industrial area in Pretoria. The current land and buildings belonged to the founder – *“now we continue to develop the place here.”*

The interview was held with 3 members of the management team. They explain that homeopathy is the practice of medicine that embraces a holistic, natural approach to the treatment of illness. Homeopathic remedies are derived from natural sources *“and are diluted to make them safe.”* Therefore, the homeopathic industry is not simply about manufacturing these medicines, but *“also about giving the public freedom of choice; whether to use natural or allopathic medicines.”*

Initially, the company supplied homeopathic products and basic materials directly to doctors and homeopaths, to order. The products and basic materials were (and still are) imported from all over the world, although Germany and Switzerland have been the key suppliers. This means that 50% of input costs relate to transport. In line with supply chain management practices, the company uses strategies such as bulk orders and optimum volumes to reduce import costs.

Over the years, the company has established links with about 400 doctors and homeopaths, who form the main customer base – *“we have become a key supplier of homeopathic products in South Africa.”* The supply chain management is focused on efficiency – *“every order coming in by 11 am needs to be with the doctor or homeopath, wherever they are in South Africa, by 2 pm the next day.”*

In addition to the supply chain activities, the company has established a manufacturing unit for homeopathic products. The unit has four production lines: a liquid medicine line, two tablet production lines and a *“small batch”* production line. The managers see the combination of these as an important element of their competitive advantage in South Africa. The company is able to produce small batches of tailored homeopathic products for different customers in the pharmaceutical retail sector as well as mass production for bigger clients.



Over the years, the manufacturing unit side has expanded and developed high-quality facilities, enabling the company to undertake contract manufacturing for other pharmaceutical businesses – *“we have the capabilities here, and we manufacture and pack products for them.”*

The managers mention that manufacturing and supplying homeopathic products requires a different mind-set to working with allopathic medicines. The product ranges are much larger in the homeopathic industry because it is in combinations of many products that the medicine has impact – *“we can’t just cut the bottom*

80% and keep the top 20% 'block buster' products, and make money out of the top 20, because then there is no health effect." The company's key focus is on selling around 40 fast moving products. There are about 300 stock keeping units (SKU) for the over-the-counter range, and about another 100 SKUs for the professional range.

A new line of business that "*will be interesting*" is African traditional medicine. The company is linked to a traditional Sangoma¹⁰ doctor and produces five Sangoma products in a 'value pack'. This line of business is still very slow, because customers cannot afford to buy these kinds of products.

Although the company mostly serves the South African domestic market, it currently exports three products to Ireland and the US. Export is attractive because homeopathic products are labelled as medicine in South Africa, but as a food supplement in other countries. The regulatory environment in Europe and America is therefore much lighter than in South Africa, which is "*why we want to take some of those products overseas.*" Their strategy for entering the export market is based on connections in the target countries, followed by the establishment of distribution networks. The company takes slow steps in checking how distribution in other countries works out regarding the rules and regulations with which it has to comply. There is a lot of regulatory work to sort out for the US in particular because "*those guys just sue you for everything that you do.*"

Internal capabilities

The company develops homeopathic medicines from scratch and experiments with the combination components. The product development unit of the company first identifies gaps in the market and suggests a certain homeopathic medicine to develop. The R&D developer then figures out the ingredients to use for the new product, based on literature and experience. These ingredients are subsequently checked against internationally recognised standards in the German, French or other European pharmacopeia¹¹. It is essential to confirm the effectiveness levels of vitamins and minerals for instance, and if the literature supports their use in treatment – "*we cannot claim something on a label if it doesn't have that evidence.*" Then the new product is developed in their quality control laboratory after having tested the input materials, to ensure that it complies with the standards. In addition, the company conducts audits on its suppliers, to ensure that they follow the correct procedures to guarantee product safety.

Then a test product and a first validation batch is manufactured. The developers run an analysis to see if the capsules have the same amount of Vitamin C, for example. There is then stability testing, to make sure that the product will remain stable throughout its shelf life.

Testing the effectiveness of the product on patients, via a blind test¹² for instance, "*is a very difficult one. In the homeopathic world there is nothing like that.*" Product development depends mostly on client feedback with regards to the homeopathic side. Instead, the company takes the approach that if the medicines work for the individual, then demand will subsequently grow – "*like one product we recently developed. We sell a lot of those units a year, so it's working for a lot of people out there.*"

¹⁰ Sangoma is a Zulu term that is colloquially used to describe all types of Southern African traditional healers.

¹¹ A handbook containing directions for the identification of compound medicines, and published by the authority of a government or a medical or pharmaceutical society.

¹² A "blind test" is a method of testing in which experimental participants are unaware of what product they are given. This method prevents results from being influenced by any a priori information.

The company has a reward system in place for their employees to try to encourage innovation and the advancement of ideas. Rewards can be in the form of cash or financial support for studies, amongst others. It is a company policy that everyone is responsible for innovation – *“our strategic goals are: sales, cost cutting, innovation, and creating ‘wow’ in the company.”*



The production staff are medium and lower skilled workers. The R&D team comprises trained homeopaths and academic BSc and MSc graduates. The managers are aware of the tension between automated production lines and employment creation – *“with the current labour situation in South Africa, where do you draw the line: going automated or going with staff?”* They want to create jobs, because they view the firm as contributing to South African society. On the other hand, there are effective machines on the market to automate production. However, these machines are very expensive, costing about 6 to 8 million Rand (450,000-600,000 USD) for a fully automated packing line, and *“you can buy a lot of labour for that amount.”*

External business and institutional environment

The company is one of three larger homeopathic product suppliers in South Africa and has established a good reputation. However, over time the larger retailers have started to copy the company’s products and to create their own brands. Although all of the company’s products are patented, their products are easy to copy – *“just one ingredient can be changed and it’s not the same thing any more in our field of homeopathy. The retailers are getting away with it easily.”* This brings serious competition, because these new products are usually cheaper. The managers feel that *“there is a disproportion in the market.”* Their company complies with all of the regulations and rules that are applied to a normal medium-sized pharmaceutical company. The company has the infrastructure with the brand and quality control – *“that is what we need to operate to get our licence.”* The copying retailers, on the other hand, do not observe the rules and regulations. They just see a profitable trend, get raw materials from a supplier and produce a capsule for the market. *“Those are the guys that are able to then sell homeopathic products to the consumer for much less than we are.”* Additional competition comes from direct importers from China and India, *“but our brand has been out there since 1963 so it is a well-known brand, with quality products, so there is confidence in our brand. Although we are pricier, they still prefer our brands.”*

A related institutional challenge concerns the regulation of homeopathic medicines by the South African Medicine Control Council (MCC). According to the managers, the MCC does not understand the industry; they want to regulate homeopathic medicines as they would allopathic medicines – *“the MCC puts pharmaceutical and complementary homeopathic medicine in the same basket.”* However, the managers argue that these are two different industries and suggest a separate set of rules for the complementary homeopathic medicine industry. The latter cannot be regulated in the same way as the allopathic medicines industry.

Another problem with the MCC is its understaffing, which causes serious delays in medical dossier reviews and inspections – *“for instance, if you hand in a dossier now, you will not get a response for three years.”* In the past, the procedure was easier and much faster but also less regulated. The company is trying to work with the MCC to speed up the regulation of homeopathic medicines. *“Our CEO is also very active in the industry, so he tries to speak to the MCC.”* The company showed the MCC different models and standards

of government regulation of homeopathic medicines, for instance from Canada, which has a simplified model.

The BEE is a concern for the company. After the death of the founder, 50% of the group was bought up by the black-owned AMKA Group. *“On a shareholder level, we are about 50% there with Black Empowerment, which is okay,”* but because a lot of the raw materials come from overseas, *“the opportunity is a lot lower to get BEE procurement points on the scorecard.”* Some South African companies say that BEE scores are not important, because they are not interested in government contracts. In this case, the majority of the company’s clients are BEE retailers, who put pressure on the company to get good BEE scores, *“otherwise they lose BEE points by procuring for us.”*

In five years’ time, the managers envisage exporting to other African countries. At this stage, it is easier to export to European countries. There is resistance towards homeopathic products in Africa, but traditional medicines might open the door. *“I think the big development is again your own intellectual property, it is essential to keep those kinds of things closer to yourself, because otherwise competitors just take it and run with it.”*

3.8 Food processing – nature-identical flavours (16 employees)

This company manufactures nature-identical flavour powders and emulsions for the food processing industry, in particular for confectionery, dairy, bakery, beverage and pharmaceutical products. The owner, a chemist by education, and his wife started the business 17 years ago *“with nothing in our garage.”* The company offers new product development as well as duplication and product re-design. Typically, the customers come with a request for a particular flavour and *“we develop everything in-house until the customer is satisfied with the end product.”* The available flavours today include apple, banana, berries, coffee, chocolate, citrus, ginger, lychee, grape and kiwi, to name but a few. The company distributes to small bakeries, beverage and ice cream manufacturers in the Gauteng area as well as larger national and international food and beverage industries. The products are delivered in 1 kg, 5 kg, 10 kg and 27 kg containers. The company has a delivery truck nearby or sends the end products by courier to national and international clients.

The production of the nature-identical flavours concerns a chemical and mixing process of ingredients into cyclic aromatic hydrocarbons. In fact, nature-identical flavours have the same chemical profile as natural flavours (natural flavours are extracted from the source, while the nature-identical flavours are manufactured in a laboratory). The chemical production process does not require a lot of equipment. Key in the production is the mixing of the right set of chemicals in different percentages – *“the stirring process of the emulsions and powders is critical and affects whether the end product is stable.”* The owner invested in high-quality precision scales. *“It must be precise because some of the chemicals as input materials are very expensive.”* The company has a small laboratory for the research and development of flavours. The new flavours are tested for periods ranging from a week to a month.

The owner started small and was working 7 days a week at first because he was determined to make the business work. Over the years, the owner invested and expanded incrementally. Today, the company leases a production hall and some offices in an industrial area in Johannesburg and employs 16 people. The owner always tries to work with his own money instead of borrowing – *“my father was a farmer and he taught me that if you cannot afford 75% of it from your own money, then don’t do it.”* Moreover, the owner is concerned about expanding further in the future because of the economic and political situation in South Africa – *“I’m not a pessimist but it’s always in the back of my mind. If things go wrong, a big investment is gone,”* so he invests very conservatively.

One of his three sons works in the company – *“it is sort of a family business.”* He would like all his sons to be involved, but only one is really dedicated. One other son is still at university, but the owner expects that he will come to work in the company. The third son has not yet decided.

The owner is determined to service the customers well in developing new or re-designed existing flavours – *“we try to develop a certain flavour until we get it right. I was born as a baby boomer and I never say no.”* The owner considers the development of a new product as an enrichment for the person and it provides new knowledge for the company. *“We keep on building our intellectual property every day and so far it has stayed in the company.”*

Internal capabilities

The company has technical production workers, research and development staff and administrative staff. The five laboratory staff have MSc and BSc degrees – *“that is the best educated part of this business.”* In the administration there is an accountant, a secretary and quality assurance staff. The owner had recruited most of the staff from universities. *“We do not buy people from competitors. I do not believe in that.”* The company trains them in-house because they lack the appropriate knowledge and practical skills. The company regularly sends staff on short courses on subjects they did not learn at university.

The owner says that the company has an open, straightforward working culture – *“there’s no big boss here”* – and a *“very flat and informal”* management system. If there is a problem in the company, then the owner and the staff discuss it openly. The owner regularly works with the technical and production staff in the factory. He still does part of the research and development of the products.

The company lacks space and the production process is *“somewhat unorganised at the moment.”* The owner plans to expand the working space next year. With the current equipment and some reorganisation of the production, putting the scales on a rail for instance, the owner expects to generate 50% more production capacity, while no extra purchases of machinery will be required. The efficient organisation of the 195 different ingredients as raw materials into tanks remains a challenge. Some of ingredients are highly flammable and require special storage.

External business and institutional context

About 95% of the chemicals and ingredients that the company uses as input are imported from Europe, America and some from China. The company gets inspected for importing these raw materials by the South African authorities. *“There’s a lot involved in importing raw materials. You can’t just import the type of materials that allow you to produce ecstasy, for instance.”* Other dangerous materials require special care in transportation. The owner no longer deals with several countries because they do not respect safety regulations. On one occasion, he ordered a dangerous ingredient from China, which arrived shortly after in a normal carton box by air, while it should have been stored in a special aluminium container. The *“wise-guy”* Chinese exporter just changed the export code, which he openly admitted. The owner did not like that practice at all – *“if something had happened in that plane, I would be guilty and accountable.”*

There is competition with other flavour producers in South Africa. The entry barriers in the business are quite low, according to the owner – *“everybody can copy the products without too much effort.”* It also works the other way around, when clients bring a sample of competitor products to the owners and request a similar product. The owner likes competition *“because it makes me and my people in the laboratories sharper.”*

The brand name of the company has also been copied. Not long ago, the owner went to West Africa, where a man complained about his product. It appeared that the product was actually not produced by the owner – *“we saw that the label was exactly the same, but the contact address was different.”* The owner realises that

he cannot do anything about competitors copying his company's name. Another story concerned an Indian person who started to send a lawyer's letter with a threat to sue the owners for \$200,000 because he had already registered the company's name in India – *"I said, 'Go ahead, sue me, see what happens.'"*

The owner travels quite extensively to African countries to promote the products, even to less accessible and dangerous locations. The good thing about the business is that there is always demand, because *"people must eat and drink. That is why I am in this business."* While doing business in other African countries, the owner learned something from the international businessmen in Africa – *"never get involved in countries' politics, supply them with what they want. Don't ask questions."* In other African countries, the owner often has to deal with corruption practices. He does not like that – *"this is not the way I'm doing business."* He has a policy that if the price is \$10 in South Africa, the price will be the same in Kenya, \$10 plus the freight and official clearing costs. The owner wants a transparent system because he believes that the company will only survive by working in a transparent way – *"I would like my children to make a big success out of it."* He is not interested in doing business in America and Europe because it is too far. *"I'm little bit scared of India because they try to copy everything."*

Regarding positive experiences with the government, the owner has enjoyed support from the DTI in organising trade and business missions to Ghana and Nigeria, amongst others, over the past 3 years, but found the missions, sometimes with 20 to 30 people, not so effective. There were many long speeches by DTI representatives about *"how well things are going in South Africa and half of the stuff is not true. A lot of speeches, which means nothing for me."* Instead, he organises additional meetings with potential business partners himself during the missions, which often works out well – *"I try to get mileage out of the mission."*

Regarding the institutional environment, the owner is not so positive. At the same time, he believes that his company is too small to be interesting for government officials seeking personal gain. *"I reckon the government goes after the really big boys."* The owner mentions that his company does not comply with the BEE. *"Everybody says you must be BEE compliant because then you can get government contracts,"* but the company deals only with commercial clients – *"I'm not a tender business."*

The owner has had negative experiences registering his formulas with the South African Association of the Flavour and Fragrance Industry (SAAFFI). To register his products as Halal or Kosher, he had to send the (confidential) ingredient list. One of the SAAFFI staff forwarded these formulas to a friend, who started to produce by themselves. The owner sometimes feels that he is treated like a second class citizen – *"this is my country and I'm proud of my country."*

Manufacturing in South Africa is slowing, according to the owner. Many firms in South Africa are becoming like those in all the other African countries, focusing only on import and export. *"They just bring everything in and re-sell. They do not manufacture."* Moreover, the owner mentions that there are 15-20 million foreigners working illegally in South Africa – *"we cannot send them out, unfortunately, because then there's nothing left of the economy."* The owner explains why there are fights between some of the black people from Malawi and Zimbabwe and the black South Africans. *"Sorry to say, but the outsiders just work a little bit harder. The money is the same but they just put more effort in as well. They are willing to do work that our fellow countrymen do not want to do."*

The security situation is worsening. He and his family were victims of crime – *"about a year ago my wife and I had guns against our heads."* One evening, four men with screwdrivers and guns entered the house and tied the four family members up. Since then, he has improved the security measures in and around his house – *"we're not going to let these guys ruin my life. My wife and I carry on - we don't discuss it anymore."*

The owner is not aware of government innovation policies or programmes. He wonders whether government officials know much about the industry *“because it’s fairly technical.”* The owner considers education as a very important matter for policy attention. He regrets that the level of education has dropped, while it used to be well respected anywhere in the world – *“from South Africa, you could call any country in the world and you would have a job tomorrow because our education levels were extremely high. Now, you can’t do it anymore.”* He also sees the limitation of entrepreneurship training programmes – *“you cannot educate a guy to be entrepreneurial, it should be inside. If it’s not there, then you cannot switch it on.”* Sometimes the company gets *“extremely clever people”* for job interviews but they are not able to do the job because they lack common sense, according to the owner – *“you have to be able to make a plan and make something work.”* The owner also thinks that it is an attitude problem – *“there are too many (black and white) young people earning too much money for what they do and they take it for granted.”*

4. Analysis and conclusions

The aim of the qualitative study on innovation in manufacturing SMES in South Africa is to support the quantitative research part of EIP-LIC, as well as to share insights with similar research projects at other academic institutions. This could help researchers to validate, compare and complement existing theory in literature and research design and hypothesis development with contemporary bottom-up realities on the ground in South Africa, as perceived by manufacturing SME owners and managers. The report may also serve as reference material for reflecting and interpreting the outcomes of quantitative research in this area. Earlier qualitative studies in the framework of EIP-LIC have been carried out in Kenya, Ghana and Tanzania, Vietnam and Indonesia, applying the same qualitative approach and report format, and enabling comparison across the countries of study in the DFID project.

This growing collection of insights from the various countries describes how innovation processes and mechanisms are manifested within manufacturing SMEs, and reviews the internal capabilities and external environment, including formal institutions, the business system and the informal institutional context. The research framework is reflected in the list of semi-structured interviews (see Annex 1). In addition, the owners and managers shared their stories outside this framework and advanced issues that are relevant and interesting for current scientific work. The qualitative reports of all 10 African and Asian countries of study will be made available for researchers and a wider audience, downloadable from the project website.

It is important to note for the analysis and conclusions below that the validity of qualitative research should not be considered in terms of sample size and representativeness of the cases for the total manufacturing SME sector in South Africa. Qualitative research in general does not claim to collect and analyse data from a representative sample. Instead, on a case-by-case basis, qualitative analysis provides exploratory (deductive) insights into issues, processes and systems in a bottom-up way that helps to suggest theoretical concepts for the local context. It may suggest original or overlooked and policy-relevant factors (variables) and conditions to follow up in the quantitative analysis. Against this background, the selection of cases involved ‘information-oriented’ sampling, as opposed to ad-random sampling, aiming at developing a diverse yet comparable dataset with regard to subsector, enterprise size and innovative activities.

In the paragraphs below, several key trends and notable patterns across the South African SME cases are identified and analysed. It is important to note that this concerns a first analysis of the qualitative empirical material from South Africa within the DFID project context, which is to be followed up in more depth with a view to developing or complementing academic articles. The chapter concludes with initial policy ideas and implications and several observations with regard to the set of further research questions to be considered within or beyond EIP-LIC.

General observations

A first overall observation during the preparation of the fieldwork in South Africa, compared to organising the qualitative interviewing in Kenya, Ghana and Tanzania, was the relatively high number of formally registered SMEs (10-100 employees) in the manufacturing sector in Pretoria, Johannesburg and the surrounding area. Moreover, SME owners and managers were open and happy to receive the research team at their premises for an interview. The interviewed SMEs, in terms of employees, were larger in size than most of the SMEs interviewed in the three African countries so far. This supports the observation previously

made that the so-called ‘missing middle’ of SMEs,¹³ a key issues in African countries, may be a lesser problem in South Africa (see chapter 2).

Innovation definition

Most interviewed owners and managers in the South African companies described in chapter 3, in different ways, introduced new products, processes and technology in order to improve and expand their business operations. Some would clearly qualify as innovation, while others would not, depending on how innovation is defined and assessed. In advanced economies, innovation is typically measured by R&D expenditures and number of patents of new products or processes, as proposed in the Oslo Manual¹⁴ (OECD, 2005). From a radical technology perspective, much of the ‘newness’ introduced in the South African cases would not qualify as innovation. Such an assessment would in any case have been impossible because the owners do not systematically record R&D expenditures and have not registered patents.

Taking a broader and economic perspective on innovation, viewing it in terms of incremental adoption and adaptation or of new combinations of existing technologies creating value (Szirmai et al., 2011), it is evident that the new elements introduced in the interviewed companies resulted in improved and expanded business operations. As described in emerging innovation theories on LICs, much innovation depends *on an aggregation of small insights and advances through ‘learning by doing’ rather than on major technological inventions* (Carayannis et al., 2003).

Despite increasing interest in the literature, the exact definition of innovation in LICs remains an issue in theory (Çapoğlu, 2009) and for its application by the researchers in EIP-LIC. The broadest possible definition of innovation, from an economic perspective, referred to in the qualitative research section, is everything new that the company does to raise productivity and/or to stay ahead of its competitors. Or, as Fagerberg et al. (2010) put it, *“Innovation is often seen as carried out by highly educated labour in R&D intensive companies with strong ties to leading centres of excellence in the scientific world. Seen from this angle innovation is a typical ‘first world’ activity. There is, however, another way to look at innovation that goes significantly beyond this high-tech picture. In this, broader perspective, innovation – the attempt to try out new or improved products, processes or ways to do things – is an aspect of most if not all economic activities. In this sense, innovation may be as relevant in the developing part of the world as elsewhere.”*

Assuming the broader perspective on innovation in EIP-LIC, box 1 presents several definition elements to assess innovation in an LIC context for the analysis of the cases in this report.

Regarding the dimensions of innovation, Kaplinsky and Morris (2001) identify five types of innovation: (i) process innovation, aiming at improving the efficiency of transforming inputs into outputs; (ii) product innovation, leading to better quality, lower price and/or more differentiated products; (iii) business practice innovation, implying new ways to organise the business and attract new clients; (iv) functional innovations, assuming responsibility for new activities in the value chain, such as design, marketing and logistics; and (v) inter-chain innovations, moving to new and profitable chains. These types of innovation are taken into account in the analysis in this report.

In many innovation definition and measurement documents, such as the OECD Oslo Manual (OECD, 2005), an explicit distinction between product, process and other types of innovation is made. However, distinguishing the types of innovation in the manufacturing SME cases interviewed so far in Kenya, Ghana,

¹³ This phrase has been used relatively loosely in economic development discussions, meaning a lack of SMEs particularly in the developing world. See: http://www.africa.com/blog/investing_in_africa_defining_the_missing_middle/

¹⁴ <https://www.oecd.org/sti/inno/2367580.pdf>

Tanzania and South Africa was not such a clear and simple matter. It is more common to see an integrated combination of several types of innovation, where one type of innovation triggers or enables another, such as the introduction of a new process (technology) that results in the launch of new products requiring the reorganisation of the workshop and staffing.

Box 1: Innovation newness, process and value creation

A cross analysis of definitions in innovation theory from recent decades (Voeten et al., 2011) shows that innovation is repeatedly typified by three key elements: newness, process and value creation.

Addressing the first element, Kotabe and Swan (1995) argue that innovation can be investigated in terms of both **newness** to the company and newness to the market or world.

Regarding the second element, the innovation **process**, all owners and managers themselves initiated, managed and owned the innovation process within the unit of analysis, their company. They developed the idea, sometimes inspired by others, started to run small experiments and trials and eventually implemented the new product or production technique on a commercial scale. As is often the case in incremental innovation in developing countries, this was not a planned and formalised process involving a pre-defined innovation strategy and an R&D department.

The third element, **value creation** of innovation, is evidenced either through lower input costs or higher sales revenues (Porter, 1985). Higher profit through new premium products of better quality, or appealing to a certain fashion, increases competitiveness.

Analysing the South African cases for newness, process and value creation, as suggested in box 1, is one possible way to assess whether the observed new phenomena within the companies qualify as innovation or not.

- The food processing company (section 3.1) is innovating by investing in and building new extraction machines and equipment, using existing technology. Another innovation is the application of an existing processing technique on another product (chicory). The innovation will enable the firm to increase production volume, productivity and serve the markets in South Africa. The company is confident about the value that will be created. The innovations are incremental and not ‘new to the world’.
- The company manufacturing train parts and components (section 3.2) acknowledges the need to invest radically in new technology. However, it lacks the serious investment money to do so. The high costs of the technology and interdependency of other actors in the network makes decision making even more difficult. At present, there are small incremental innovations at the production facility.
- The chemical company (section 3.3) is innovative in various ways, which basically comprises new products at the request of customers and various new production installations. A notable business practice innovation concerns the marketing and distribution of concentrated products in the townships. This is an example of ‘bottom of the pyramid’ innovation, implying not only packaging in small quantities and selling to the poor, but also granting some form of ownership, co-creation and value to the small entrepreneurs.
- The uniform producing company (section 3.4) is facing serious problems with the supply of inputs. The owner therefore plans to establish a textile fabric production facility herself. This qualifies as functional innovation as it takes over another function of the value chain. The innovation is radical and new to the firm.

- The truck chassis producer (section 3.5) needs to invest substantially in new technology, which involves high investment costs. Moreover, the technology concerned is specialised, which allows less flexibility of production. The investment money is not currently available. On the shop floor, the staff and manager worked out improvements in truck design and re-organisation of the production process.
- The textile company (section 3.6) established a manufacturing unit for producing curtains and other products incorporating textiles. The owner serves customers who first went to other tailors to get the curtains stitched. This is also a functional innovation to generate extra income from existing clients. The owner is constantly looking for new products based on the customers' ideas and preferences. He recently introduced combined furniture and textile products. The 'new to the firm' innovations are incremental.
- The homeopathic medicines (section 3.7) were quite new in the South African market in the past. Today, the firm's innovation mostly concerns the ongoing search and development of new homeopathic products and new combinations of products. The technological innovation is not evident and involves production lines of existing technology.
- The flavours producing company (section 3.8) is improving the production process incrementally. There are preparations to change the production organisation. The investments in new technology are very conservative and new to the firm.

4.1 Trends and patterns in the cases

At first glance, none of the eight manufacturing SMEs is very innovative in terms of radical 'new to the world' technological development. The types of innovation concern mostly incremental product innovation and functional innovation. The new products and processes in the innovative companies were not radical and not 'new to the world'. The ideas for new products are mainly acquired from the market. Customers come with requests and suggestions, or the owners talk with clients. It is therefore demand-driven innovation. One should be aware that the findings in the eight cases do not justify a general conclusion of limited innovativeness of South African firms.

Similar to the earlier qualitative explorations in Kenya, Tanzania, Ghana and Vietnam in the framework of EIP-LIC, the owners of the companies in South Africa are very aware of the importance of introducing new products and technology to raise productivity and efficiency to maintain their level of competitiveness. At the same time, the uncertain political environment and stability of the country make them reluctant to actually invest. All owners and managers are careful in their decision making and take small steps.

Internal capabilities

All companies are formally established, having a written organisation structure, job descriptions and HR procedures. It is the owner who mostly initiates, co-ordinates and manages the new ideas, including preparations for the innovation, technical details, and the product launch.

The workforce in the companies involve skilled labourers in the production workshop on the one hand, and well-educated staff in management and marketing in the other. Several owners face difficulties planning the number of staff in accordance with the orders received. Laying off staff is a complicated process in South Africa because of the powerful and active labour union. In general, the owners fear the labour union and their regular strikes.

According to the owners, there are lots of illegal foreigners from neighbouring countries working in South Africa. Apparently the economy depends on their involvement and employers are happy to engage these workers because they are more committed and work harder. It is also acknowledged that this situation cannot be maintained.

The companies have different HR policies and practices towards their employees. For some companies, it is a challenge to retain their workers when they get irregular orders. Most companies have some form of reward or bonus system, or acknowledge the importance of it. In some cases (such as the chemicals firm), there is a sense of ownership and a family business and the employees work with the owners to innovate. In others (such as the truck manufacturer), the employees take a laid back position and remain passive.

Some enterprise owners mention that the South African education system does not deliver workers ready to do most of the production work, requiring some skills training. Graduates from colleges and universities do have theoretical knowledge but lack practical skills. Some say that the level of education has dropped dramatically in South Africa. Most companies have to do additional in-house training. Although in some cases the employees provide innovative ideas, most owners signal the limited creativity of their workers and refer to a passive attitude.

Typically, the companies possess technology and machinery that they have had for a long time. The technology is still able to deliver a certain minimum product quality. Occasionally, new machinery is bought from profits and savings. The interviewed owners and managers are well-informed about technological possibilities though the internet or informal contacts. They actually have ideas and plans for upgrading and expanding their companies. However, new (technological frontier) machines are relatively too expensive and advanced compared to the expected returns on investment in the short run.

The cases do not show an active involvement of women in the management of enterprises. Only one black female entrepreneur was interviewed (it proved very hard to identify female entrepreneurs). She mentioned a feeling of being undermined and the common perception in her community that women ultimately are responsible for raising children and running the household.

External business environment and formal and informal institutions

All interviewed SME owners and managers indicate that the business environment is challenging. At the same time, they see plenty of business opportunities in South Africa and the surrounding region. There is a lot of potential for import substitution of manufactured goods. They see a growing market in neighbouring African countries and the supply of input materials is secured without too many problems.

However, the institutional and political context is a key issue for the interviewed companies. Most entrepreneurs are seriously concerned about the future of South Africa. In particular, the ANC's politics, corruption and poor economic governance of the country. This prevents them from really investing and innovating in their company. They have a risk averse approach, take small steps and postpone substantial investments in technology. This 'glass ceiling' situation seems to be the case among most interviewed SMEs.

Most of them hold a negative perception of government regulations and interactions. Contrary to many other African countries, South Africa has a reasonably well-organised government with more financial means than other African countries. This allows the government to launch business support programmes for industry. However, all the entrepreneurs complain about the red tape and complex paperwork required to access these programmes. Many government procedures have become more political and time-consuming and civil servants have little idea of what is going on in the companies. The BEE policy is particularly problematic for the white-owned companies, where it is perceived as unfair. As a result, the white-owned enterprises do not feel acknowledged for what they do for their country in terms of economic growth and employment creation.

These businesses ‘do their own thing’ and keep the government at a distance. Only one company, the uniform producer, was preparing a bid for support from the government.

Security is an issue that is identified as of great importance. Most of the entrepreneurs directly or indirectly have been victims of violence. There is also increasing problems in the streets with hawkers.

The Global Competitiveness Report 2016-2017 signals a number of shortcomings in the business and institutional environment that may limit South African competitiveness going forward. Infrastructure development has stalled, both in transport and electricity, with power shortages experienced in recent years. Institutional quality has diminished, with increased political uncertainty, less transparency, some security concerns, and business leaders having less trust in politicians. This makes it unlikely that the high unemployment rate will diminish soon.

Interaction with formal technology institutions, as suggested in the innovation systems literature (Lundvall, 1997), does not happen formally, but on an informal basis. Many SMEs owners and managers indicate that they would like to cooperate with universities to undertake research at their premises, sharing research insights, for instance. There is very little spill-over of technology as a result of cooperation between firms, subcontracting or other forms of collaboration within value chains, business clusters or networks.

4.2 Policy issues – insights for policy makers to consider

As mentioned in paragraph 2.3, various ministries within the South African government have defined and implemented policies to stimulate an innovation-driven economy. Despite this policy framework and intention to promote innovation, the question remains as to what extent the government is able to reach SMEs. Some of the interviewed SME owners and managers are aware of support programmes aiming at technology funding and development for SMEs, but the reality of the eight interviewed cases is that SME owners enjoy only minimal benefit from any government departments.

One problem is the bureaucratic obstacles and red tape. Complicated procedures have made owners give up applying. Another difficulty is that BEE requirements in terms of ownership are too demanding. Finally, support and in particular technology input is provided in a technocratic top-down way, with companies seldom consulted. Entrepreneurs prefer not to engage in government support as a result and avoid interactions with the government.

Moreover, the stories and experiences of the owners and managers raise the issue of whether an innovation-driven and ‘new to the world’ innovation approach is the way forward. Most of the required technology is already available, but elsewhere in the world. In fact, all owners in the cases are well informed about the technological possibilities of their business. Without too much difficulty, the owners and managers find the technology themselves by drawing on various sources of information (the internet, informal business contacts and trade fairs). Moreover, the companies themselves refine and adapt the existing technology once acquired. So, although setting up technology development policies and programmes may help SMEs, the availability of technology is not perceived as a barrier to innovation by the owners and managers.

The institutional context, providing trust, predictability, stability and access to finance is more of a problem in preventing investment in technology and innovation and thus ‘convergence’ from happening. At the same time, technology developed elsewhere may not address the local needs or issues in South Africa. Local solutions and innovations are required for context-specific problems.

Overall, in the Global Competitiveness Report 2016-2017 of the World Economic Forum, South Africa is characterised as an efficiency-driven economy. That means that companies that are competing less on factor

endowments, unskilled labour and natural resources, as factor-driven economies such as Kenya, Ghana and Tanzania do. The cases in the latter countries are more involved in trade (export) and processing of basic products based on their factor endowments. These activities are labour intensive, requiring unskilled low-cost labour and low productivity. South Africa, as an efficiency-driven economy, would innovate to save on labour and production costs, for instance. This usually requires substantial investment in high-tech machinery such as production lines and advanced production processes. That is actually not happening in the interviewed South African cases, due to uncertainty about the future. Owners and managers take small cautious steps one at the time, not involving too much risk, manoeuvring around the institutional challenges.

Innovation climate

How then can the innovative capacity of SMEs in South Africa be increased? According to the World Bank, an efficient innovation policy by governments will address the overall innovation climate, which goes beyond traditional science and technology policy. At the same time, government action can usefully focus on a few generic functions to help SMEs to grow. It can facilitate the articulation and implementation of innovative initiatives, since innovators need basic technical, financial and other support.

The South African government can reduce obstacles to innovation in competition and in regulatory and legal frameworks. Accessible government-sponsored research and development structures can respond to the needs and demands of surrounding communities. Finally, the education system can help form a receptive and creative population.

The lack of relevant education is a problem for the companies interviewed, who feel there are insufficient skilled workers and operators to work with modern machines. SME owners and managers complain that university and college graduates do not have the required technical and craftsman's skills, exposure to modern technologies, or an entrepreneurial and creative attitude.

As mentioned earlier, several ministries and agencies are engaged in efforts to develop and promote innovation policy, usually labelled as Science, Technology and Innovation (STI) policy. Despite considerable effort in developing strategies and plans, actual implementation is challenging, due to the limited availability of knowledgeable staff.

Nearly all SME owners and managers suggest that creating a stable and predictable institutional context would be an efficient and effective way to promote innovation in South Africa. All kinds of innovation policies and programmes could be developed, but the results of such policies will be undermined by the weak and unreliable wider formal institutional context, which is particularly the case in South Africa.

Another policy idea emerging from the DFID project is that several owners and managers suggest not to focus on governmental policy makers only, but on direct advice to SMEs on how to improve their business. One idea is to develop non-governmental business information exchange networks and platforms, establishing contact between entrepreneurs in Africa and beyond, to facilitate discussion and deals within the various sectors. SME owners suggest that the DFID project could establish a network of all SME owners and managers contacted during the implementation of EIP-LIC and create a website for them to stay in touch with each other.

Research issues - insights to address the research questions

The qualitative analysis of South Africa, and also the earlier studies on Kenya, Ghana and Tanzania and Vietnam show the many internal and external factors supporting or hindering innovative behaviour of owners and managers of manufacturing SMEs. The econometric analyses and the mathematical models approach within EIP-LIC implicitly seek correlations and causal relationships between independent variables such as

internal capabilities, a favourable policy context, the availability of finance and technology, and the occurrence of innovation and innovativeness as dependent variables. The associated economic theories explain and predict economic outcomes as a basis for further policy development.

However, a limitation is that the claims of econometric analyses are true only *ceteris paribus*, that is, they are true only if there are no interferences, or inhibiting causes, systems or dynamics. Critics say that the most important methodological issue is the simplification, idealisation, and abstraction that characterises econometric research. However, the qualitative research element of this project shows numerous inhibiting factors. This is problematic once research outcomes are translated into policy, from which true impact is expected, and constitutes an emerging methodological challenge in terms of developing meaningful and effective policy recommendations in the EIP-LIC research project.

Theme 1 'Innovation Systems'

The interviewed entrepreneurs are aware of the state of the art technology but cannot afford such machines because of the high costs involved. Moreover, those that do have the money available do not invest because of uncertainty about the future, in macroeconomic terms. The government does not provide sufficient assurance of a stable business environment. Most SMEs do not expand further because of these challenging business conditions.

In reviewing the innovations in the cases against innovation systems theory, one would expect that the SMEs would be surrounded by a network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies (Freeman, 1987). However, it appears that the SME innovations have little connection with universities or research institutes. The same phenomenon has been observed in Kenya, Ghana and Tanzania. In these mostly factor-driven economies in Africa, innovation concerns more advanced process techniques to process primary products into competitive ones at the world market. By contrast, in South Africa, as a more efficiency-driven economy, one would expect that the companies would seek state-of-the-art technology to save on labour costs and raise productivity. Formal technology institutions do facilitate this process. However, it seems that the developed technologies offered by government S&T institutions are not those required by SMEs; while for the technologies they do require, no suitable technology institutions exist.

The cases suggest several firm-level factors playing a critical role in the engagement of incremental innovative activities, more than supporting institutions. The innovation process is initiated, managed and owned by the company without any external involvement or support from other businesses. Informal contacts, even within formal institutions, play a key role in some cases. It is the owners who develop ideas for innovation, with employees playing only a limited part by suggesting improvements at the operational level.

By contrast, the motivation, contacts and international exposure of the owner are key factors in engagement in innovative activities. Moreover, the availability of funds as a result of profits is essential. Regarding the risk-taking of their innovation projects, most owners and managers are confident about the market opportunities in South Africa, the region and beyond.

There are virtually no links between the interviewed SMEs and public sector actors, such as universities, governments, or NGOs, as presented in the 'Innovation Systems' analytical model. The so-called innovation system, as a co-evolutionary network of actors, does not exist. Instead, the business system actors and informal institutions play a key role in providing information, technology, credit and overall stability and predictability. The role of these actors could be further explored in EIP-LIC research, with particular regard

to the doing, using and interacting (DUI) approach in learning and innovation processes, as suggested by Lundvall et al. (2009).

The outcomes of the qualitative inquiry suggest that technology and underlying knowledge may not be the problem. Regarding the diffusion of technology, most of the entrepreneurs are well-informed about technological possibilities and are able to import the technology by themselves with little difficulty, provided funds are available. For most of the technical problems faced by the SMEs, there is already a technical solution developed somewhere in the world, so there is little need to develop local 'new to the world' technologies. There is therefore little need for intermediaries to bring producers and users of innovation/knowledge together. There are few 'breakthrough' technologies that could be disseminated on a wider scale, and the owners and managers seek to meet their specific needs with available technology. They can identify where to source the technology and have suppliers. In some cases, a local technician can make a copy of the machine. There is little local innovation for local problems.

Theme 2 'Finance for Productivity Growth'

Finance is considered a critical constraint among the interviewed companies in South Africa. In all companies, the owners aim to introduce new products and raise productivity because they see business opportunities in doing so, but lack finance for expensive state-of-the-art technology to be able to face international competition. The SME owners develop their business with small, incremental investment, based on savings and small loans, and do not take the leap of a large scale investment. Although there are well developed ideas for innovation and confidence in the market, investments cannot be made because of uncertainty in the long term economic and political outlook.

Although they are 'proven' entrepreneurs of registered businesses, able to assess risk and handle a difficult business environment, they are not considered creditworthy. Most of the interviewed companies were given informal loans and gifts by family and friends.

References

- Çapoğlu, C. 2009. The Meaning of Innovation and Entrepreneurship in Developing Countries. *International Studies In Entrepreneurship* 21: 85-91
- Carayannis, E. G., E. Gonzalez and J. Wetter. 2003. 'The Nature and Dynamics of Discontinuous and Disruptive Innovations from a Learning and Knowledge Management Perspective'. In Shavinia, L. (ed.) *The International Handbook on Innovation*, London: Elsevier Science Ltd
- Chaminade, C., B.-Å. Lundvall, J. Vang and K. J. Joseph. 2010. 'Designing Innovation Policies for Development: Towards a Systemic Experimentation Based Approach'. In: Lundvall, B. Å., K. J. Joseph, C. Chaminade and J. Vang (eds.) *Handbook of Innovation Systems and Developing Countries*, Cheltenham: Edward Elgar, pp. 360-379
- Fagerberg, J., M. Srholec and B. Verspragen. (2010). The Role of Innovation in Development. *Review of Economics and Institutions* 1 (2); Article 2
- Freeman, Ch. 1987. *Technology Policy and Economic Performance: Lessons from Japan*. London and New York, NY: Pinter Publishers
- Kaplinsky, R., and M. Morris. 2001. *A Handbook for Value Chain Research*. Brighton: Institute of Development Studies (IDS), University of Sussex.
- Kotabe, M. and K. S. Swan. 1995. The Role of Strategic Alliances in High Technology New Product Development. *Strategic Management Journal* 16(8): 621-36
- Lundvall, B.-Å. 1992. *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*. London: Pinter Publishers
- Lundvall, B.-Å., K. Joseph, C. Chaminade and J. Vang. 2009. *Handbook of Innovation Systems and Developing Countries - Building Domestic Capabilities in a Global Setting*. Cheltenham: Edward Elgar Publishing
- OECD. 2005. *The Measurement of Scientific and Technological Activities: Proposed Guidelines for Collecting and Interpreting Technological Innovation Data – Oslo Manual*. Paris: Organization for Economic Co-operation and Development (OECD), Eurostat
- OECD/The World Bank. 2014. *Science, Technology and Innovation in Viet Nam*, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/9789264213500-en>
- Porter, M. 1985. *The Competitive Advantage: Creating and Sustaining Superior Performance*. New York, NY: Free Press
- Porter, M., J. Sachs and J. McArthur. 2002. 'Executive Summary: Competitiveness and Stages of Economic Development' In Porter, M., J. Sachs, P. Cornelius, J. McArthur and K. Schwab (eds.) *The Global Competitiveness Report 2001*, New York: Oxford University Press, p.16-26
- Szirmai A., W. Naudé and M. Goedhuys. 2011. 'Entrepreneurship, Innovation, and Economic Development: An Overview', In Szirmai, A., W. Naudé and M. Goedhuys (eds.) *Entrepreneurship, Innovation, and Economic Development*. Oxford: Oxford University Press, pp. 3-32
- Uyen, H. P. Phan, Phuong V. Nguyen, Kien T. Mai, and Thao P. Le. 2015. Key Determinants of SMEs in South Africa. Combining Quantitative and Qualitative Studies. *Review of European Studies* 7(11): 359-375

Voeten, J., J. de Haan and G. de Groot. 2011. 'Is that Innovation? Assessing Examples of Revitalized Economic Dynamics Among Clusters of Small Producers in Northern South Africa'. In A. Szirmai, W. Naudé and M. Goedhuys (eds.) *Entrepreneurship, Innovation, and Economic Development*. Oxford: Oxford University Press, pp. 96-121

World Bank. 2015. South Africa Mainland Poverty Assessment. World Bank. [http://www.worldbank.org/content/dam/Worldbank/document/Africa/South Africa/Report/South Africa-poverty-assessment-05.2015.pdf](http://www.worldbank.org/content/dam/Worldbank/document/Africa/South%20Africa/Report/South%20Africa-poverty-assessment-05.2015.pdf)

World Bank. 2010. *Innovation Policy: A Guide for Developing Countries*. World Bank. <https://openknowledge.worldbank.org/handle/10986/2460>

World Economic Forum. 2015. *The Global Competitiveness Report 2015 - 2015*. Geneva: World Economic Forum

Yin, R. 2003. *Case Study Research: Design and Methods*. Thousand Oaks, CA: Sage Publications

Appendices

Appendix 1: List of questions for semi-structured interviews

A. BASIC INFORMATION

1. Name of business and owner, location, legal status, years of operation, types of products, manufacturing subsector, productive activities, number of employees, management structure, some indication of turnover and profit and average investment size.
2. Short history and background of business model. How is the company generating value? Position in a value chain if applicable, suppliers, major clients/markets.
3. Did the company grow/expand in recent years? To what extent (why) does the owner consider his/her company as an innovative company as compared to other manufacturing SMEs in South Africa?
4. Did the company itself introduce a new product, process or technology to raise productivity or to face competition? Provide examples of product/process/technology innovations that enabled survival/growth/expansion in the past 3 years.

B. INNOVATION

New

1. Description of the type of innovation (process, product, incremental, radical). What is new? Did some innovations enable/trigger other types of innovation within the company? Management innovation in terms of goal setting?
2. Is the innovation 'new to the world' involving inventions by internal R&D, or is it a copy, adaptation or adoption of an existing product or technology?
3. How does the owner, employees, clients and others actors perceive the newness? (just a small improvement or as a 'breakthrough')?

Process

4. Idea: Where did the idea and motivation for the innovation come from? What were the first steps in the idea formulation and who initiated these? What was difficult and what was easy?
5. Testing: What were the subsequent steps in testing? At what point in time did it become clear that the new product or process would become a success? On what basis did the owners decide to further implement/commercialise it? Did the owner try new things that failed?
6. Commercialisation: what were the steps towards the implementation? What confidence/trust provided back-up? What was difficult and what was helpful?

Value

7. How do product/process/technology innovations create value for the company?
8. Did the innovation increase productivity, if so how? (lowering production costs per unit, labour/capital input)?
9. Did the competitive position change as a result of the innovation, if so how? (via premium products, better, newer fashionable products and new export markets)?

C. INTERNAL CAPABILITIES (FIRM LEVEL CONDITIONS)

What are the internal strengths and weaknesses with regard to the innovativeness of the company?

Dynamic capabilities

Sensing and shaping opportunities for product/process/technology innovations

1. To what extent do you (and the employees) see the need/urgency to be innovative?
2. How do you or your employees identify new business/innovation opportunities?
3. Who is actively involved in identifying these opportunities?
4. How is raising productivity and competitiveness linked to identifying opportunities for innovation?
5. How do you target a new market segment? How do you consider the competitiveness of your company?
6. How is your company adjusting to customer needs?
7. How does the company select the ideas that it is willing to invest/innovate in?
8. Who is involved in this process?

Reconfiguration of the company

9. How do you adjust by being innovative to the surrounding business environment?
10. How do you share knowledge within your company?
11. How are employees informed about new developments?
12. How does your company train employees to adjust to new developments?

Goal setting

13. Do you have an implicit or explicit goal setting system to improve performance?
14. How do you pay employees for performance? (more salary, rewards)
15. How to you increase motivation? Is there intrinsic motivation (ambition, ownership) and external (money) motivation?

Slack time

16. Do you give employees time to develop or try out a new approach or develop new ideas about products or services, or business processes?
If yes:
 - What exactly was expected from employees during this time? What kind of activities should employees undertake during this time?
 - Did all the employees get some time or was it restricted to a specific group; and if so, which group?
 - Why did this establishment give employees this time? What was the goal/idea behind it?If no:
Have you ever considered giving employees some time to develop new ideas? If yes, what was the reason for implementing it? If not, why not?

D. FORMAL INSTITUTIONS

How does the owner perceive the opportunities and threats for product/process/technology innovations of the surrounding business, policy and regulatory context in South Africa?

1. Is the owner aware of governmental policies/programmes in South Africa that specifically aim to stimulate product/process/technology innovations in manufacturing SMEs? What is the owner's idea and perception of these governmental policies (programmes/projects)?
2. Does the company actively participate in, or benefit from, such governmental policies/programmes/regulations? (specify in what ways these stimulate the company's innovativeness)
3. What role do intellectual property rights and patent laws play in your innovation activities? Does the owner aim to patent innovations? If so, which patent office is used? Does the owner find intellectual property rights and patent laws helpful for innovation activities? Does the owner respect the intellectual property rights of others when innovating? If not, why not?
4. Are other generic governmental policies/programmes (not explicitly aimed at promoting innovation, stimulating education or providing access to finance) supporting the company's innovativeness in an effective way?

5. Do certain governmental policies or regulations prevent the owner from introducing and investing in innovation? What threats in terms of policy and government regulations emerged in the innovation process?
6. Does the company participate in, or benefit from, programmes or projects stimulating innovativeness run by NGOs and/or international development agencies? (kind of programmes/projects and impact)
7. How does the owner acquire knowledge and technology for product/process/technology innovations? When conducting innovative activities, does the company collaborate with formal bodies, such as universities, R&D centres, research institutes and so on? Why (not)? Which kind of organisation? Does the owner encounter any difficulties in collaborating with such organisations? If so, of what kind? Are these collaborations ultimately beneficial for innovativeness? If not, why not?

E. BUSINESS SYSTEM, SPILLOVERS, EXPORTS

To what extent (and how) are contacts and interactions with other businesses - local, national and international - important for stimulating product/process/technology innovations within the company? Examples?

Business systems interaction

1. Has the company ever introduced a new product/process/technology to suit the needs of a local client/buyer? If yes, did the client/buyer help in any way to make these changes?
2. Has the company ever followed the advice of a supplier in introducing a new product/process/technology?
3. Does the company have active business cooperation (subcontracts)? What is the nature of the cooperation and what is the benefit? Did that involve a new product/process/technology?
4. Does the company buy from or sell to any multinational firms located in South Africa? If yes, has the company ever benefitted in any way from cooperation with these firms to develop a product or improve production techniques?
5. Where does the company typically recruit employees? Has the company ever recruited employees from a client, supplier or competitor? Were these employees particularly helpful in improving products or production techniques? Has the company recruited employees with the explicit aim of improving products or production techniques? Where did they work before?

Location

6. How long has the company been located at the present address? Did the company move to this address or was it created at this address? What were the main reasons why the company was moved to/founded at the present address?
7. How does the presence in the location/region affect the company's performance, innovation, growth? What is the owners' perception of the dynamics of the present location/region with regard to the businesses around (micro, SMEs, large, multinational)? What is the size of the region to which the owner refers?
8. Are the other businesses in the region similar or different in terms of size, production, sector and type? To what extent do firms produce comparable goods in the region?
9. Alternatively, to what extent are these other business hindering and competing? Does the owner see them mostly as competitors? Does that imply a need for innovation?
10. Does the company buy inputs (what, quantity) from firms located in the region? What is the quality of local inputs? Did the owners ever ask a local supplier to change a product to suit certain needs? If yes, did the company help the supplier make these changes in any way?

Export

11. Has the company ever exported some of its products to foreign countries? If yes, when was the first export? Has the company exported some of its output abroad in the last year? To which countries?
12. What was the main driver of the company's decision to export? Did the company actively look for foreign clients? Did foreign clients or a wholesaler contact the company (if yes how: website, fair, etc.)? How did the company hear about export opportunities or has the company ever been recommended to foreign clients? If the company was contacted or recommended, why was this the case?
13. Has the company ever improved an existing product or created a new product with the explicit aim of exporting it? If yes, was it at the direct request of foreign clients or to find new foreign clients? Did the company make improvements to comply with standards and regulations?

F. INFORMAL INSTITUTIONS

1. Family and friends (overseas)
2. Cultural perception of innovation. Is innovation something good? Or should we strive for stability and harmony in society?
3. Informal think tanks, informal knowledge through contacts with university experts
4. Rent seeking individuals, corruption
5. Hindering culture, traditions or customs
6. Social learning, collective learning
7. Community solidarity, craft traditions

Appendix 2: List of companies interviewed

SMEs interviewed in Pretoria/Johannesburg (South Africa) 8-13 Oct 2015

Subsector	Products	Location	# of employees
1. Agro processing	Cereal and malt intermediate products	Johannesburg	41
2. Chemical products	Detergents and soap	Johannesburg	36
3. Food industries	Taste and flavour substances	Johannesburg	16
4. Automotive	Chassis and truck bodies	Pretoria	55
5. Metal products	Parts for aerospace industry	Pretoria	12
6. Metal products	Turbo spare and repair parts	Pretoria	20
7. Health care	Homeopathic medicines	Pretoria	100
8. Equipment	Curtains for hospitals and hotels	Pretoria	10

SMEs interviewed in Pretoria/Johannesburg (South Africa) 20-23 Sept 2016

9. Textiles	Clothes	Pretoria	30
10. Textiles	Uniforms	Pretoria	20
11. Computer applications	3D printing and design incubator	Pretoria	5
12. Metal processing	Train parts and components	Johannesburg	100
13. Textiles	Clothes	Johannesburg	45
14. App and software development	Insurance app	Johannesburg	3
15. Textiles	Clothes wholesaler	Johannesburg	1500
16. Textiles	Clothes	Lenasia	46

Appendix 3: DFID research questions

The DFID research project takes an ‘economics’ perspective on innovation, and involves econometric analysis of a set of variables concerning barriers at firm, regional and national levels and their causalities with the *innovative behaviour/capability of entrepreneurs* and subsequently innovation and productivity. This constitutes a reductionist and deductive approach in defining variables for analysis in which the impact of individual factors on innovation is assessed by applying quantitative econometric methods (*ceteris paribus*). The DFID project key research questions are grouped under two themes:

Theme 1 ‘Innovation Systems’:

- What firm-level and regional-level factors hinder or foster the engagement of firms in innovative activities?
- What is the impact of in-house innovation activities versus collaborative innovative activities or technology acquisition activities on the innovative performance of firms in developing countries?
- What is the role of economic spillovers within clusters of firms in fostering economic growth and innovation?
- What are the most critical barriers to the process of innovation and the diffusion of technology in low income country settings?
- What types of links between the public/private sectors, universities, governments, NGOs and the private sector are more conducive to innovation activity?
- What is the role of intermediaries to bring producers and users of innovation/knowledge together?

Theme 2 ‘Finance for Productivity Growth’:

- How does the design of formal and informal financial institutions affect firm productivity dispersion across SMEs?
- What are the firm level margins that make finance matter for productivity?
- What role do observable managerial decisions (e.g. managerial practices, innovation, product market competition, product quality, technology adoption, location of the plant and the trade status) and managerial characteristics (e.g. gender, age, education, behavioural aspects) play in explaining the nexus between financial development and firm productivity?
- How does firms' productivity respond to exogenous developments in the financial environment?
- What are the macroeconomic implications of such development experiences?